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We intend to start a column in the forthcoming issues of our journal to encourage debate, discussion, presentation of opinions on the various issues concerning educational research and innovations. Readers are also welcome to express their views regarding the research papers and notes published in this journal. Rejoinders from the authors about the reactions towards their papers would also find a place in the proposed column.

— Editors

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Research Papers

Representation of Science in Upper Primary Science Textbooks: An Assessment

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ABSTRACT

In the present study science textbooks of the upper primary level of schooling were assessed for their representation of science. The set of instructions prepared by Chiappetta et al. (1991a) were found suitable (with minor modifications) to carry out content analysis of the textbooks. This set of instructions uses themes of scientific literacy to assess science textbooks. The scientific aspects are.

1. *Science as a body of knowledge.*
2. *Science as a way of investigation.*
3. *Science as a way of thinking, and*
4. *The interaction of science, technology and society.*

Reliability of the assessment was determined by using a second rater of text who categorised identical units as the first investigator. Fairly high interrater agreements have been obtained indicating reliability.

The present study provides a description of textbooks with reference to various aspects of scientific literacy. This is a necessary requirement for curricular evaluation. The results would allow teachers to choose a textbook or make modifications in their teaching by incorporating the aspects found inadequate in the textbook.

THE question "What should be the emphasis of science education?" has been on the agenda of science educators for several years Various approaches have been proposed and tried out. Some ideas have worked

in part, others have been totally unsuccessful. Recent developments in science education have emphasised a content-process-context-based curriculum, which would be provided to all students. The role of science to produce scientists, engineers and technologists has expanded to also include all the citizens who would be able to appreciate and participate in the responsible use of science and technology for development. The objective of "Science for All" is to develop experts, middle-order workers and scientifically literate citizens.

Any reform in the curricular process gives primary attention to the development of instructional material with the main focus on the textbook. Immediately after a new science policy is evolved and goals identified, the first step taken is the development of a curricular framework. With these goals in view, the textbook is produced. Although in educational terms "curriculum" is the sum total of activities that a student undergoes in school, in actuality, it is taken as the textbook.

The studies carried out by the National Science Foundation, USA (1977-78) reported the importance given to textbooks in a science classroom One important finding was that textbooks determine the order, the examples and the application of science topics that students experience (Weiss, 1978). Investigations of the science classroom transactions revealed that 90 per cent of the teachers used a textbook 95 per cent of the time (Harms and Yager, 1981). Although such significant studies have not been carried out in India, it is well-established that textbooks play a central role in our school education. One of the findings, of a study of the system of science education in India, was that textbooks were the "only material through which curriculum guidelines percolated via the practicing schools" (Menon, 1986).

Since the image of science presented in classrooms is by and large limited to the textbooks, there is need for a balanced representation of all aspects of science The messages contained in a text influence how the users perceive the subject (primarily students but also teachers).

A textbook which emphasises scientific facts, explanation of concepts and principles would probably "tell" the reader that science is a neatly organised body of knowledge. If the text contains questions and activities that require the user to solve, she may think of science as an investigative process. A textbook which describes how scientists work and traces the historical developments of scientific ideas, is likely to imply that science is a human endeavour. In today's world, science, technology and their products have become a part of human life Therefore the portrayal of the interactions of science, technology and society in textbooks would indicate to students the relevance of science, its positive and negative effects and the influence science and society have on each other.

In India, the textbook still remains an important tool in classroom transactions associated with the teaching and learning of science. The teachers use the textbooks to define the syllabus or to identify the curriculum and many times teach from it, while students use it to prepare for examinations. The importance therefore of the textbook necessitates an analysis to determine how they portray science.

Review of Related Literature

The following studies gave importance to the textbook as a teaching aid and emphasised the necessity to determine the extent to which science textbooks conveyed messages to the students about various aspects of the nature of science.

Fensham (1986) defined three dimensions for social content of science education, namely, social nature of scientific work, social application of science and social ideology. Content analysis of some textbooks of the UK the USA and Australia (1960-74) revealed that all the books omitted the social nature of science. There was considerable variation regarding social application of science from hardly a mention in the Nuffield Combined Series (UK) to many examples in Environmental Science (UK). The textbooks of earlier years mentioned only the useful applications, but those in later years gave the positive and negative effects of science.

Eltinge and Roberts (1993) used linguistic content analysis (LCA) to develop a method to assess the portrayal of science as a process of enquiry in a single series of high school biology textbooks (1965-85). The researchers found maximum indication of science as inquiry in the 1965 version following the curricular reform movement of 1960. Increased reliability was ensured as the raters' subjective impressions were restricted to judging how words were related in a clause, previously identified using LCA.

Chiappetta, Fillman and Sethna (1991 b) used aspects of scientific literacy to determine curricular balance in science textbooks. These aspects included science as a body of knowledge, as a way of investigation, as a way of thinking and the interaction of science, technology and society. The science textbooks were found to differ in the emphasis given to each category. The researchers reported inter-rater agreements of more than 80 per cent among three raters of text, thereby indicating reliability of the method.

Purpose of the Study

The purpose of the present study was to assess the representation of science in science textbooks of the upper primary level of schooling (Classes VI-VIII) Since textbooks play a major role in the teaching and

learning of science, it necessitates a need to analyse them for their representation of science.

Scientific literacy was chosen as the theme for assessment due to the emphasis given for developing scientifically literate citizens in the "Science for All" programme launched in India.

PROCEDURE

The scheme prepared by Chiappetta et al. (1991 a) was found suitable for carrying out content analysis of two sets of books This instrument categorises dimensions of scientific literacy which were compatible with the ideas held by the investigator These categories are:

1. Science as a body of knowledge· includes the facts, concepts, principles, hypotheses of science and recall questions.
2. Science as a way of investigation where the student is required to answer a question by working, experimenting.
3. Science as a way of thinking· where the student is "told" about the scientific enterprise, and methods used, how scientists work, development of scientific ideas
4. Interaction of science, technology and society· includes the benefits, harmful effects, the influence of science on society and society on science.

In the present study, science textbooks were assessed to determine the relative weight given to the four aspects of scientific literacy mentioned above These aspects are in agreement with the dimensions of scientific literacy to be achieved, as recommended by the National Council of Educational Research and Training (NCERT), Ganguly (1991)

The method of content analysis was used for assessment of the textbooks Content analysis is a "phase in information-processing in which communication content is transformed, through objective and systematic application of categorisation rules into data that can be summarised and compared" (Paisley, 1969) Content analysis is characterised by objectivity, systematicity and generality The procedure is carried out with a clear set of instructions based on specifically defined categories.

The method of content analysis is quantitative. The investigator initially defined the units that would be used for analysis of the textbooks. These were a sample unit (a page), a recording unit (chapter or topic), (Krippendorff, 1980) The central theme of a recording unit was considered while placing it in the relevant category. One page was selected at a time to ensure continuity in communication. Frequency counts were made on the assumption that this would indicate the emphasis of the content of communication.

Content analysis of 15 per cent of the total pages in a textbook was

carried out because the variability in this case was the lowest as opposed to samples of 5 per cent and 10 per cent while there was no appreciable difference between the 15 per cent and 20 per cent samples. The pages were randomly selected and each recording unit was placed into the appropriate category. The frequency of occurrence in each category was tallied and the percentage text devoted to the four categories calculated.

The reliability of the procedure was judged by having identical units in the text analysed by another rater, working independently. The Class VI textbook of both sets was analysed by the second rater. Percentage agreement and Cohen's kappa statistic (which takes into account agreement due to chance) were calculated to determine reliability.

The questions at the end of 20 per cent of the chapters were also analysed to determine the aspects of scientific literacy they focus the students' attention to. The second, the penultimate and one or more chapters in the middle were chosen for analysis.

Selection of Textbooks

The science textbooks produced by the National Council for Educational Research and Training (NCERT) for the upper primary classes (VI-VIII) were selected for analysis. These textbooks are used in a number of schools and also provide a foundation for many succeeding science textbooks produced by the states and private publishers. A second set, the Headway Science series that was apparently different from the NCERT textbooks, was chosen for comparison.

The upper primary level of schooling was chosen as this constitutes one block Also, since there is no board examination at the end of Class VIII, the teachers as well as the students would not be under pressure to cover content. It would also be easier to incorporate changes at this level.

Table 1

Percentage of the NCERT Textbooks devoted to the Four Aspects of Scientific Literacy

Class	I (SBK)	II (SWI)	III (SWT)	IV (STS)
VI*	62 89	16 49	1.03	19.59
VII	62 29	18.86	1.71	17 14
VIII	71 56	8 82	1 96	17.64
Average	65.58	14 72	1.57	18 12

* For these values, the entire Chapter I has been deleted

Results

The NCERT textbooks devote almost two-thirds of the total text to

the knowledge aspect of science (Table 1, mean for category I · 65.58%). The investigative nature of science and the interactions of science, technology and society receive much less importance (category II : 14.71%; category IV : 18 12%). Science as a way of thinking has been neglected (category III : 1.57%).

TABLE 2

Percentage of the Headway Science Textbooks devoted to the Four Aspects of Scientific Literacy

Class	I (SKB)	II (SWI)	III (SWT)	IV (STS)
VI	34 62	48 46	9.23	7.69
VII*	47 09	42 26	0 01	10.19
VIII*	57 51	36.79	0 52	5.18
Average	46 4	42 49	3 25	7.69

* There are separate books for Chemistry, Physics and Biology Combined frequency has been given.

The Headway Science series has a more balanced outlook. Considering the mean values in Table 2, science as knowledge constitutes 46.4 per cent of the text. Science as an investigation includes 42.49 per cent of the total text. Analysis of the set of textbooks reveals a gradation pattern with respect to categories I and II The quantity of information presented in the Class VI textbook is less than that in Class VII, which in turn is less than that in Class VIII. There is a simultaneous decrease in the emphasis on investigative process in science. Science as a way of thinking has more instances in the Class VI textbook The fourth category · interaction of science, technology and society has only an average of 7.69 per cent of the text devoted to it.

TABLE 3

Analysis of the "End of Chapter" Questions in the Science Textbooks

Class	I (SBK)	II (SWI)	III (SWT)	IV (STS)
NCERT				
VI*	37	2	–	–
VII	26	12	–	–
VIII	25	3	–	1
Total	88	17	–	1
Per cent	83.01	16.03	–	0 94

Class	I (SBK)	II (SWI)	III (SWT)	IV (STS)
HEADWAY SCIENCE				
VI	35	43	–	–
VII	48	35	–	–
VIII	102	25	–	–
Total	185	103	–	–
Per cent	64 23	35 62	–	–

Analysis of the questions asked at the end of chapters (Table 3) reveals that in the NCERT textbooks, as much as 83 per cent of the questions are knowledge-based. Only 16 per cent involve investigation, of which most require the student to reason out answers and are not activity-based. There was a single instance of a question relating science with everyday life.

TABLE 4

Inter-rater Agreement Between Two Raters of Text for Analysis of the NCERT Textbooks and the Headway Science Series (Class VI textbooks) for Aspects of Scientific Literacy

Class	I (SBK)	II (SWI)	III (SWT)	IV (STS)
NCERT				
Percentage Agreement	89 19	81 48	58 82	88.57
Cohen's kappa	0.88	0 77	0 37	0 88
HEADWAY SCIENCE				
Percentage Agreement	94.74	87.39	60 87	71.43
Cohen's kappa	0 95	0 85	0 36	0.59

The Headway Science series had fewer questions based on the knowledge aspect of science (64 per cent), while 35.6 per cent of the questions required the students to carry out an activity, do paper-pencil tests or reason out answers.

The reliability of the procedure is shown in Table 4. Only the Class VI textbooks of both the sets were used for this purpose. Very high inter-rater agreements have been obtained for categories I, II and IV. However,

category III, science as a way of thinking, is more difficult to define At the same time the frequency of occurrence in this category is so low that a few disagreements would reduce percentage agreement drastically, and hence is statistically insignificant.

Category IV, interaction of science, technology and society of the Headway Science series also shows a low percentage agreement. This could be explained by the fact that there are many instances in the text which have multiple themes including categories I and IV. In such cases the central or the more important message has been picked up. The two raters obviously differed in this respect.

Discussion

The NCERT textbooks emphasise the knowledge aspect of science. This includes scientific facts, concepts, principles and laws governing nature. The users of the text (primarily students but also teachers) are thus "told" about the known aspects of science. Hence science has been presented as a body of known facts. There is no mention of the hypotheses or models in science, the inclusion of which would have indicated the thought processes that lead to the building-up of scientific knowledge.

A small percentage of the NCERT textbooks deals with the investigative nature of science This occurs despite awareness of the importance of emphasising both content and processes of science. A number of activities have been provided in the textbooks. However, for most part, they are immediately followed by answers The emphasis is thus on "correct" solutions rather than on working out the problem experimentally or logically Such activities neither create curiosity nor motivate the learner. The approach undermines the investigative nature of science, which is reduced to memorisation of solutions. The objectives of science education state that students should understand the tentative and divergent nature of science. However, the activities confirm a "one-question-one-method-one-answer" way of thinking In comparison, the Headway Science series has a more balanced presentation of science with equal emphasis on content and investigative processes. The text-cum-workbook requires students to do activities or reason out answers interspersed with text.

The students of Classes VI to VIII are at a transitionary phase between the Piagetian stages of Concrete operational and Formal operational. The textbooks for the upper primary classes, therefore, require inclusion of both activities and abstract concepts and thought processes. The emphasis on processes can only be given if the content is reduced, since activities take more time and planning. When there is too much content, the teacher is forced to teach it at the expense of student activities. Thus, a situation

is created when the student uncritically accept the principles "taught" them.

The other dimension of inquiry-based science has been neglected in both sets of textbooks. This is the aspect where the student is told about the scientific enterprise. According to Schwab (1963), it is this dimension of inquiry which is more important. He states: "The essence of teaching science as inquiry would be to show some of the conclusions of science in the way they arise and are tested." Yet thirty years later, there is hardly a mention of the way in which science proceeds.

The first chapter of the NCERT Class VI textbook includes a description of the "scientific method" of working, the positive and negative effects of science and its relevance to daily life. The impression created is that having once mentioned in the text, it need not be referred to again. The students are expected to understand and remember this for the rest of the time. Such a depiction indicates a lack of thoughtful curriculum development. Mayer (1964) has previously commented on this practice. He says . "An interesting thing about textbooks that begin with a chapter on scientific method is that they seldom if ever refer again to it throughout the text. It is as if the authors were saying" this is the scientific method This is how scientists work. Now, with that out of the way, let us get back to the real meat of science, which is a collection of facts "....processes of science of science must permeate not only textbooks but curriculum." (original emphasis).

Most science textbooks are written by teachers and experts with many years of training in science and the philosophy of science. What is most obvious to them (in terms of inductive and deductive reasoning, scientific reasoning, problem solving, evidence and proof, cause and effect) would not be perceived equally by students who are just beginning to understand science. It is imperative, therefore, to explicitly state the thought processes of science.

The NCERT textbooks have sought to create the relevance of science to daily life. There are a number of instances of the scientific facts, principles and laws as operating in the daily life of the learner. However, the advantages and disadvantages of science and a discussion of societal issues related to science could have been given.

While Table 2 indicates that 10 per cent the Headway Science series is devoted to the interactions of science. In the present method a paragraph was analysed as a unit. Yet, many times a single paragraph had multiple themes running through it, of which the central or the more prominent one was selected This happened more frequently in the Headway Science series. Using a theme as a unit may have resolved this problem. However, it is known to decrease reliability (Krippendorff, 1980). A paragraph has indentations which make it easier to pick up.

Textbooks may emphasise many aspects of science Nevertheless only those which are tested would indicate which aspects are the mainstay of the text Fensham (1985) suggests that it is very necessary to judge the type of questions asked to test learning. According to him, "from a learners point of view this is what defines what studying science is all about." Analysis of the questions indicates the importance given to the knowledge aspect of science by both sets of textbooks. Most of these are of the simple recall type. A variety of questions have been provided: short answers, fill-in-the-blanks, matching columns, giving one-word answers. In addition, the Headway Science series also includes questions which require the student to perform an activity (hands-on or paper-pencil tests), use tables and illustrations.

While carrying out the content analysis of the textbooks, using paragraphs as units, it was necessary to initially resolve the following questions. Do parts add up to a whole? And does identification and categorisation of single units give an idea about a set of units in totality? The statement may be clarified with an example· In a science text, a law may be stated followed by examples of occurrences of the law, its development and applicability. In this case, should the set of units be treated as separate units or in its entirety? The present investigators believe that within the context of a textbook, analysing single units makes more sense because the various aspects of science-content, process and context could be differentiated Thus analysis of parts implies the attention given to the various aspects of scientific literacy in the entire text.

The science textbooks have been written by experts in the field of science. Beginners in science require the nature of science to be more explicitly stated. The guidelines for "Science Education for the First Ten Years of Schooling" NCERT (1986) mention attributes of the nature of scientific knowledge (that it is replicable, derived from observation and experiment, tentative, historic, empirical, holistic and based on evidence). However, the guidelines also state that "these essential features would not form the body of the text of informational material, rather they ought to be the underlying spirit of teaching-learning exercises." Yet teachers are known to teach directly from the textbook while "important points" are underlined These are almost always definitions, known facts, concepts and laws. A text which includes statements that are not authoritative, ideas that have not been worked out, or even development of a solution may indicate to the learner about the nature of science; even with mere textbook reading.

The extent of which current ideas are being introduced into science programmes can be judged by examining the contents of various published materials. The written may not be a true guide to the experience of

students. Teachers may in practice go beyond the written word, alternately, they may skip quickly over parts that appear to be "just chat" and not "real science". Thus it is only possible to judge intentions from the written text.

Conclusions

The NCERT textbooks give maximum importance to the information aspect of science. The Headway Science series has a more balanced approach with emphasis on both the content and the investigative processes of science Both sets of textbooks, however, gave little or no emphasis to the thought processes that operate in science or the interaction of science, technology and society The reliability of the procedure was determined by two raters working independently on identical units. High inter-rater agreements were obtained, indicating reliability of the method

Recommendations

The analysis of the textbooks suggests that textbook writers need to consider the following points while developing text materials.

1 Other than what is known (facts, concepts, laws), the content of science should include the conjectures and theories put forth by scientists as explanations for observed facts.
2. Many hands-on and paper-pencil activities could be included without providing ready-made answers. A number of schools do not have the necessary laboratory facilities for conducting experiments. Providing paper-pencil activities would reduce this inadequacy.
3 The processes of science can only be carried out if the content is reduced
4. The methods of science, development of ideas and attributes of the nature of science should be explicitly stated and interwoven throughout the text.
5. A variety of questions including activity-based ones and those applicable to life should follow the text.
6. Science needs to be made more relevant to the learner. Tackling of social issues that relate to science or can be explained by science is a necessary part of the curriculum.

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Experiences of Interaction between Education and Productive Work in Selected Socialist Countries

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Abstract

The present paper aims to provide a broad background of interaction between education and productive work in four socialist countries—USSR and GDR (erstwhile), Poland and China. Philosophically, all the four socialist countries have common ideology based on Marxist-Leninist theory. All of them accept the principle of polytechnical education and emphasise close integration of theory and practice. Productive work occupies a prominent place in socialist philosophy and vividly reflects in its entire educational system and curriculum transaction

While there is no uniformity in the structure of the educational system of these socialist countries, there seems to exist a lot of commonality in the curriculum design In one from or the other, the concept of polytechnical education, socially useful labour, labour practice and vocational training are included in the curriculum as its integral part. The linkage of school for the preparation of life is one of the basic principles and important features of the socialist education system.

There are many thinkers like Chu-Tzu, Thomas Moore, Komenski, Pestalozzi, Rousseau, Karl Marx, Dewy, Blonsky, Gandhi and Mao Tse-Tung whose works may be regarded as sources of inspiration for educational thought and practices centred on work. Philosophically, it has always been deemed desirable for education to be associated with man's production function. M.E. Sinclair in her article "Introducing Work Experience Programmè in Third World Schools—A Review" provides a set of objectives generally assigned to the introduction of productive work into education. Some of the important objectives are:

— Imparting knowledge and skills leading to increased productivity in manual occupations.
— Developing ability to participate in village level organisations, such as cooperatives, etc.
— Changing students' attitude to develop respect for labour and work.
— Developing qualities of character deemed necessary for community welfare and worker productivity.
— Making school self-reliant.
— Making education socially useful and economically relevant.

A close look on the above objectives indicates that they are based on economic, social, ideological and political and educational considerations. A primary concern for introducing productive work in school curriculum is to make education relevant to economic needs. In many countries it is being introduced to remove the dichotomy between manual and intellectual work and defuse social tension caused by unemployment. As far as educational consideration is concerned it is based on the conviction that introduction of work into school system will change student's values and attitude by emphasising the dignity of labour and manual work The introduction of productive work into educational programme is also based on a country's political and ideological objectives.

Similarly, there is diversity in the clientele of vocational education programmes. The students range in age from those who are at school full-time to those updating and changing career and also preparing for retirement. The broad concept of vocational education has a "dual mandate", to develop the individual both in his/her own interest as well as the interest of the society. There is an inherent conflict between these two elements, and the way in which it is resolved may well be a question of political philosophy, national culture or both. Differences in the way in which vocational education has developed in different countries are often due to varying economic, political and cultural factors; which are part of the exciting diversity of vocational education in different systems. Moreover, among all sectors of education, vocational education is subject to constant change in response to the pressure of technology, the nature, content and availability of employment, and attitude to learning and to work.

The above description of vocational education, in general, and interaction between education and productive work, in particular, arouses enough curiosity and interest to study the experiences of different countries which would be useful and rewarding to policy makers, planners, implementing agencies, and scholars interested in this vital area of education.

For the purpose of this study, it would be desirable to divide the countries on the basis of ideology. The best way, therefore, would be to

classify them in socialist and nonsocialist countries This paper aims to provide a broad background of interaction between education and productive work in four socialist countries—USSR and GDR (erstwhile), Poland from Eastern Europe and China from Asia. Throughout the present study, the experiences of the erstwhile GDR are presented as a model and not the GDR as a political entity since its merger with the ERG into an unified Germany. The selection of countries is based on the assumption that they more or less represent different models of vocational education based on socialist ideology. The paper also attempts to provide an overall picture of the recent developments in the subject and highlights significant experiences of the socialist countries in this direction confining largely to the formal system up to the secondary stage of education.

The facts, figures and findings are based on the limited literature available in the published form locally as well as through a number of seminar reports Thus, there is scope for further study in greater depth of the subject matter.

Overview

After the second world war, the East European countries were faced with the problems of post-war reconstruction, preparation for industrialisation and expansion of agricultural and industrial production, shortage of trained manpower, and provision of more and better education. In 1973, the basic educational principles, endorsed by the supreme Soviet of the USSR, and subsequently adopted in other countries of Eastern Europe were

- Equal educational opportunities for all
- Eight years of compulsory education
- Free tuition at all levels
- An unified system of public education
- Continuity between the various stages of education

In the light of the above, one of the purposes of education was focussed at preparing young people for practical work and utilising their services in the social and economic development of the country.

Jon Lauglo and Kevin Lillis in the article, "Vocationalization in International Perspective", remark that "the socialist concept of polytechnical education is rooted in Marxist epistemology which does not accept dualism between "theory" and "practice". The notion of "Praxis" is central to Marxist epistemology which does not consider theoretical knowledge superior to practical work. Man learns by acting on natural phenomena, transforming them while experiencing their influence. Curriculum, therefore, should attempt to integrate "theory" and "practice" resulting into production. The educative value of productive work is accorded a high place in Marxism. "Education with production",

is an idea which has been a recurring theme in socialist policy. It has taken different forms and been given different emphasis at different times and in different countries."

During the cultural revolution in China, "Education with Production" has meant that student should participate in productive work outside the school and learn directly from workers and peasants Further, the goal has been to break down the institutional boundaries between education and productive work. The most extremely romantic idea within this tradition would be that of Shul'gin in the early years after the Russian Revolution—"the withering away of the school." Neverthless, the trend in socialist countries has everywhere increasingly been to recognise the need for institutional boundaries between different school subjects and between education and productive work. Price in his study of productive work in the curriculum of Chinese and Soviet Secondary Schools, has noted that natural flow of productive process does not easily fit pedagogic needs. This is more so if the aim is not only to teach well defined and stable technique but also a group of underlying general processes and related bodies of knowledge

Lauglo observes that "learning about production" has become a distinct school subject, and natural science is taught as an academic subject with a structure and sequence of concepts that are quite independent from local production. The more clearly "polytechnical" elements of the curriculum (learning about production and training) have, in Eastern Europe, become established in "polytechnical centres", which may be lodged within local industry, but which still remain separate from the normal production organisation of the firm—a system pioneered in East Germany (Siebert-Klein, 1980). In short, pedagogic and organisational imperatives of school imply institutional boundaries also when integration is the professed ideal. A study by O'Dell on recent vocationalisation trends shows "such institutionalisation inspite of an educational ideology which in its origin militated sharply against it. What remains is support for work-related practical skills as a worthwhile part of general education and an ideology that stresses the economic and political importance of work—especially manual labour."

Perhaps the most distinctive single feature of communist education is that it does encompass all educational aims and concerns. The shaping of the future through the training of children is a commitment which extends far beyond the classroom and the workshop into society, and indeed with the ways of thinking and perceiving human relationship of every kind.

The idea of polytechnical education in socialist countries is quite different than that of western world For western students it will be associated with the idea of an educational institution offering high-level

training in several technologies like Regent Street "Poly" in London. But for the socialist concept of polytechnical education, one has to trun, not to the institution bearing that name, but to the educational ideals of social reformers. The credit for the first systematic formulation of polytechnical education as a part of educational theory goes to Karl Marx. He derives this idea of education from his comprehensive study of society as a whole. His analysis of captitalist society led him to the conclusion that polytechical education, as distinct from polytechnical training, could only be realised within a higher social and economic order. This is implicit in the Communist Manifesto's demand that the workers should make their educational policy in the new order. It is observed by Kenneth Smart in his article on "Polytechnical Principle" that "for the worker to understand and control the whole means of production, his intellectual, physical, moral and aesthetic education would have to be completed and shaped by "polytechnic education". This concept of polytechnical education is the foundation of vocational education system in all the socialist countries

There are many common feartures of the vocational education systems of the socialist countries. Important among these principles are to provide an element of preparation for work to all citizens, raising the age of compulsory education so that after its completion one can enter into job, and extending the facility of further education to all. The training of young persons as skilled workers is imparted in vocational schools including plant and factory schools. This is imparted in three stages: general preparation for work in a school situation, specialisation and adaptation to the work situation; and periodic refresher training and upgrading.

After completing ten years of schooling, the majority of students are expected to take up production work in industry or agriculture. However, initiation into production work commences from the seventh or eighth year and, during the ninth and tenth year they are given an opportunity to learn what is expected of them in working life. The 24th Congress of the Communist Party of the erstwhile USSR in 1971 emphasised the need for possessing a recognised occupational qualification at the end of their studies, which is the view in most of the socialist countries also.

The responsibility of providing labour training to youth lies with the principal authority of a state committee or a state secretariat working closely with the Ministry of Education However, the central authority is responsible for labour matters. This has been the traditional administrative pattern in many socialist countries in Eastern Europe. The same is true in case of China.

After having an overview of the features of interaction between education and productive work in a general way, it would be desirable to go into details of its philosophy, structure, curriculum and mode of interaction in the socialist countries.

The Philosophy

The Polytechnical Concept: The polytechnical concept has become one of the major components of educational theory and practice among all the socialist countries of the world. A clear understanding of this concept is absolutely necessary as this is the basis of the education philosophy of Marx and Lenin. "Polytechnical Education" in Soviet terminology means acquainting pupils with contemporary production in theory and practice and with the relationship between society and production. It also means "effective labour training", formation of working skills, knowledge enough to make a rationale choice of career, and a foundation of consequent professional education. It is intended to contribute decisively to the unification of school and life, and to constitute an essential foundation for linking school instruction with productive work. Marx, in *Das Kapital*, left readers in no doubt about the importance of "polytechnische Abusi Inung", in shaping the worker's understanding of his ability to control the "means of production" According to him, it is an indispensable component in the all-round development of personality Kenneth F. Smart observes that "the idea of polytechnical education is not merely the basis for modification in the curriculum, or for imparting of technological bias to traditional subjects, but is a fundamental principle embedded in the educational system emerging from a radical transformation of society and a radical reassessment of the nature of man and of his place in his society and in the cosmos." Marx and Engel were not alone in upholding this principle. There were others like Pestalozzi, Fourier and Robert Owen, who had the similar view about the polytechnical concept of education, but Marx and Engel contended that only in socialist society could polytechnical education reach fulfilment, whereas under capitalism narrow professional training was all that could be envisaged.

Equality of Educational Opportunity: The whole of socialist ideology is based on equality of opportunity for all regardless of sex, race or social background. This is true for educational opportunity also. Children must, therefore, not seem to be separated for vocational training at too early an age nor must their choice of one type of training appear to deprive them of the chance to transfer to another type later on. This has the basis for creating single school system in GDR and unity and structural coherence of the educational system in the USSR.

Principle of Integration The principle of close integration of theory and practice lies at the core of the socialist educational philosophy. Theory is constantly applied to practical life situations, pupils observe and participate in the technological application and work experiecne in industry. Schools are closely connected with the social and economic forces of the

community and industrial and agricultural enterprises figure closely in the educational labour should be combined with manual labour through this important notion of integration between theory and practice.

Principle of Life-long Education: A basic principle of the socialist education system is the idea that learning is a life-long activity, which does not stop at a given age or at a given level of training Thus continuing education has/is a major part of the educational system in the USSR GDR, China and Poland. The principle emphasises the right of the individual to any level of education and to improve or broaden his/her occupational skills and qualifications at various stages throughout his/her working life.

Socialistic Philosophy in Different Countries: In the then USSR the education law spelt out the basic principles on which the system of education was based The most important of these principles are:

- The unity and structural coherence of the educational system as a pre-requisite for the realisation of equality of educational opportunity.
- The unity of instruction and character education at all levels of education Instruction is to inculcate moral values and attitudes embodied in and consistent with communist ideology.
- The linking of education with "life" and in particular with the world of work. This principle is generally expressed in the notion of polytechnical education

These principles, as derived from the Marxist-Leninist doctrine, gave Soviet education its distinctive character.

The principal philosophy of the Chinese education is to train and cultivate professionals and cultured labourers with socialist consciousness. Throughout the educational system this philosophy is deeply imbeded in all Chinese teaching and learning. Students are expected to develop in an all-round way, that is to say, morally, intellectually and physically, in order to reach the standard of a cultured person with socialist consciousness.

The Marxist-Leninist theory of personality lies at the core of the educational philosophy of the GDR, i.e., the view that the personality develops in active confrontation with reality with one's existential conditions. Human development is thought of as the active acquisition of reality, knowledge is acquired through a dialectical interaction between theory and practice. Education should combine classroom instruction with sports and production work as means of producing well-rounded, fully developed personality. By the end of the 1950s, with the introduction of polytechnical education at all levels of schooling, this concept of education was fully implemented in the GDR.

The legal foundation of the educational system, in the Polish People's

Republic, is the resolution on the development of the system of education, passed by the Polish Parliament in 1961. It states that the education system aims at preparing qualified people for work in the economy and national culture. It also says that through their education, citizens should be prepared to become builders of socialism In the resolution it is stressed that education is considered one of the fundamental elements of Poland's development as a socialist country.

According to the Sixth Congress of the Polish United Workers Party 1971 Resolution,"...it (education) should form in young people an attitude of involvement in the development of modern economy and in cultural heritage of the nation, and it should train them for future occupation."

THE STRUCTURE

The educational structure in the USSR, China, the GDR and Poland for the purpose of this study may be divided into two categories.

— General secondary education
— Vocational school education

General Secondary Education

The Soviet child, after 1984 reform of education, began compulsory education at the age of six, instead of seven, as was the case earlier. The complete course of the Soviet 11-year general education school embrace both primary and secondary education. The first year of compulsory education was in a kindergarten or Class 1 of general school (Russian. obshcheobrazavatel naya shkola). The first four years of the schooling were officially designated "Primary", Classes 5-9 as incomplete secondary schooling was in a general school, which was the usual route to unviversity or higher education or in a secondary specialist school, often known as "tekhnikum."

China has an educational system of 6-3-3-4, comprising six years of primary, three years of junior secondary, three years of senior secondary and a four-year cycle for higher education. A law of nine year compulsory education was adopted by the National People's Congress in 1986. After many years of experimental practices, a five-year primary schooling followed by a four-year junior secondary schooling is winning more favour, though small in number. Junior secondary school graduates usually have to pass a regional entrance examination to enter senior secondary school which usually aims for university preparation.

In the GDR at the age of six, children entered ten-grade general polytechnical hig school (German. Allgemeinbildende Polytechnic Oberschule), the basic school for the GDR education system. The use of the term 'high school' for the entire programme was meant as an indication of the relatively high level of general education taught there. The adjectives

"general" and "polytechnical" underlined the two basic thrusts of the curriculum The ten-year course of study was divided into three levels: Grades 1 to 3 (Lower), Grades 4 to 6 (Middle), Grades 7 to 10 (Upper).

At the foundation of the education system of the Polish People's Republic lies the basic (primary) schools. They are eight-grade, co-educational, secular establishments. Education is free of charge and obligatory for all children aged seven to fifteen.

Two stages are clearly distinguishable in the eitght-year cycle of primary education. The first stage consists of Grades 1 to 5, and the second of Grades 6 to 8 Primary schools give all children a uniform kind of education and prepare them for continuation of education in secondary general schools, secondary vocational schools and basic vocational schools.

Secondary general schools are of four-year duration and prepare young people for higher education.

Vocational School Education

In the former Soviet Union, there were over 7,500 vocational schools (SPTUs, PTUs, and VPTUs — see below) with 3.8 million students aged between 15 and 18 (in 1986 this had risen to four million) being trained in the 1,500 different trades, producing each year some two million skilled and semi-skilled workers The 1981-86 five-year plan called for 13 million graduates of the system; by 1984 the total output had reached 7.3 million. There were also some 2,100 agricultural schools with one million students, annually providing 6,80,000 skilled and semi-skilled agriculture workers, engineers and specialists. The system employed some 3,40,000 teachers and instructors *(World Year Book of Education-1987—Vocational)*

Vocational training was carried out in:

1. SPTUs—Secondary special professional technical schools. Most students had completed Grade 8 general education and undertook a three-year course for trade training diplomas and general education to the level of "Attestat" (matriculation). The 1984 reforms emphasised the role of the SPTUs, which, unlike PTUs, contain compulsory general education
2. PTUs—Secondary vocational schools which admitted only Grade 8 leavers and offered one- or two-year courses with little general education and which students completed on a part-time basis when they were in employment These were being phased out in favour of SPTUs.
3. VPTUs—Part-time evening schools, where students while working, could qualify for a trade discipline and complete their secondary education.

Figure 1 explains the educational system in the erstwhile USSR.

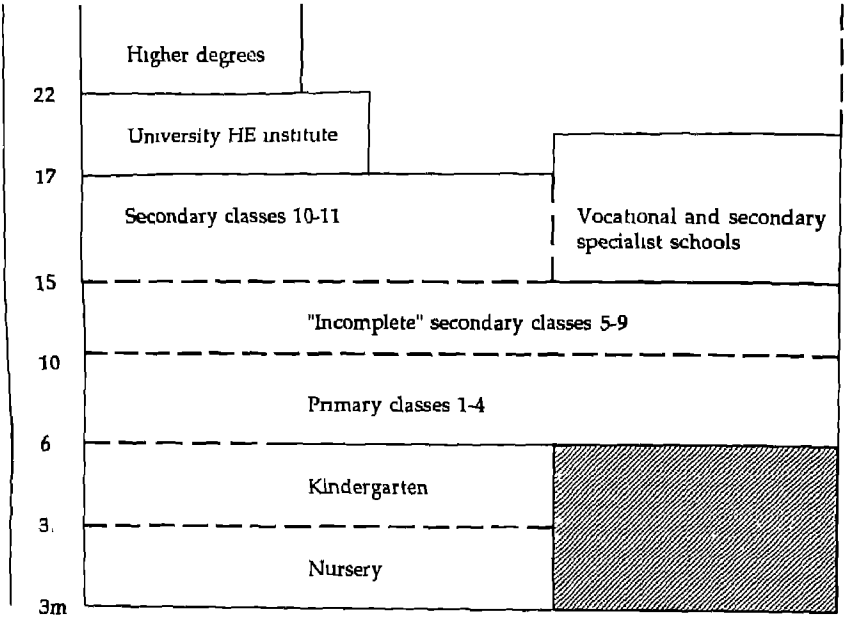


Fig. 1 The Soviet Education System (simplified)
Source. A Guide to the Soviet Curriculum—James Muckle

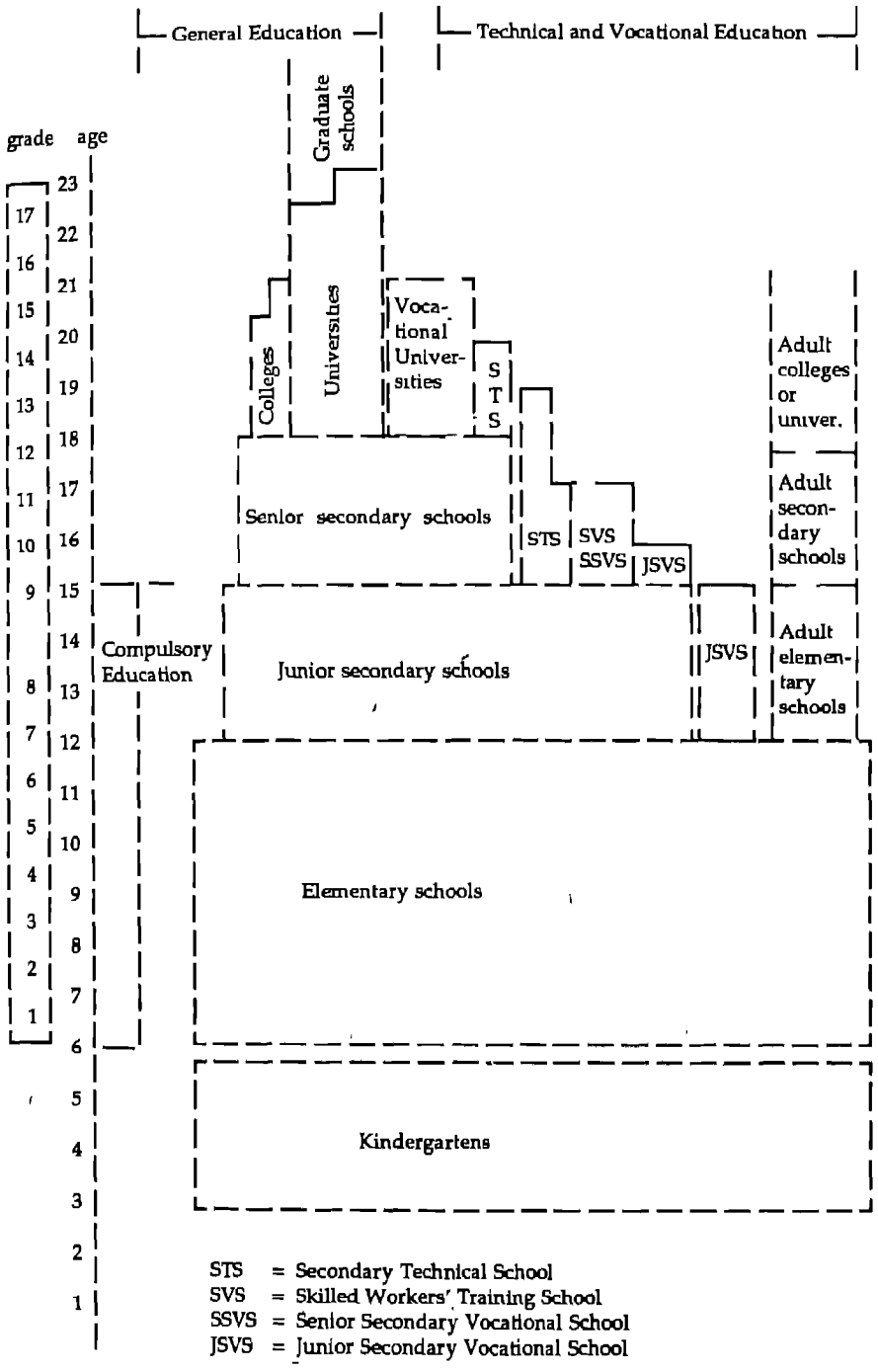
However, this is a simplified version to give an idea at a glance. The details of the system have already been discussed above.

There are secondary technical schools in China aiming to prepare middle-level technicians, managerial personnel and other para-professionals. They enrol Junior Secondary School graduates for three-four year courses. However, some schools admit senior secondary school graduates for two years or longer duration courses. These institutions were started in early 1950s following the Soviet model of "technikhum" and should be regarded as the main stay of secondary vocation education. Then there are secondary vocational schools also preparing people for middle and junior-level technicians and skilled workers overlapping with the goals of secondary technical schools However, secondary vocational schools are operated with greater flexibility and respond more quickly to local socio-economic needs and have expanded rapidly in recent years. The graduates of junior secondary schools are eligible for admission to these institutions and the duration of study is usually three years, with some courses lasting only two years.

Figure 2 presents the complete system of education in People's Republic of China, both grade- and age-wise.

In the GDR, after the completion of the tenth grade, the young people had four alternatives as regards continued education·

Chart of Education System of the People's Republic of China



- Vocational training, generally lasting two years and leading to a skilled worker's certificate. This road is taken by the majority of young people.
- Attending an advanced secondary school, for two years, leading to university entrance level (the Abitur which is largely equivalent to "A" levels). These pupils generally studied at universities or colleges afterwards.
- There-year skilled worker's training courses combined with Abitur. This alternative was chosen particularly by those young people who wanted to take up study courses in technical subjects.
- Attendance at technical schools offering three- or four-year courses for people who wanted to become nurses and medical assistants, creche nurses, kindergarten teachers, there existed a broad network of engineering and technical schools where skilled workers could attend study courses and qualify for jobs at an intermediate level.

Ten years of general schooling and at least two years of vocational training were legally prescribed for all young people so that, in actual fact, compulsory education took twelve years in all. There were almost no adolescents entering employment as unskilled workers [8]

Secondary vocational schools offer four- or five-year courses in Poland Curricula cover some 20 to 30 general and specialised subjects. Upon graduation students receive the diploma of a technician, economist or other specialist with full secondary education Basic vocational schools prepare qualified workers and lower-grade specialist. They admit pupils, who have completed primary school, for courses lasting from two to three years. Curricula in basic vocational schools contain general subjects, specialised subjects and practical training. The training takes place either in the school's own workshops or in factories or other production units and occupies between a half and a third of the time devoted to it.

Secondary technical schools provide three years of education for some of those students who have completed a course of study in a basic vocational school A diploma is awarded to those who complete the course.

The Curriculum

One of the most important components of interaction between education and productive work is the curriculum. It is through curriculum development that ideologies are incorporated in eduction and through curriculum transaction they are practised in school system. It is, therefore, essential that we must get an idea about the component of productive work in the curriculum of selected socialist countries. For the sake of convenience, we may divide the curriculum stage-wise — Primary and Secondary

The Primary Stage

In Russia the duty of the school to prepare children for the work of society was widely accepted. Labour (productive work) figured prominently in the Soviet curriculum. There was the concept of "polytechnical education" and "socially useful labour". "Labour practice" and "vocational training" were also an integral part of the curriculum.

In primary classes children were introduced to many types of hand work for two periods a week. They were taught handicrafts making simple toys, ornaments and other useful objects. They drew pictures related to this work. They learned general hygiene, washing hands, the use of cutlery, making beds, tidying up, and so on. Thus an introduction to productive work was effected as early as possible.

In China "Labour education" is introduced in general education system through the following ways·

- At the primary stage self-expressional activities, some community service and hand-work are included in the curriculum. Two per cent of the total instructional hours is given for this area. The purpose of introducing work education at this stage is to develop proper attitude and work habits

In the GDR polytechnical instruction in the ten-year general secondary school included:

- Instruction in crafts in forms 1-6
- Gardening (in the school garden) in forms 1-4

Crafts is designed to systematically impart polytechnical knowledge and skills to the pupils to familiarise them early with the role of work in society and for society. Crafts concentrates on:

- the processing of such materials as paper, cardboard, artificial leather, wood, plastics and metal including the introduction of tools required for such works and their handling up to simple devices and machines,
- exercises with construction sets for construction elements, machines components, technical models and the technical bases of the electric circuit and elementary electrical connections.

  Gardening (in the school garden) serves to employ the pupils in simple gardening works. They till the soil themselves, they sow, attend to the cultures and engage in harvesting. They carry out germination tests, observe the growth of plants, compare varieties, calculate yields, carry out fertilizing, reproductive and breeding esperiments

The eight-grade primary school, the outcome of the 1971 educational reform, the corner-stone of the entire Polish education system. The regulation governing primary education, contained in a Ministry of

Education decree of 25 September, 1965, states in paragraph 2 that "The aim of primary-school instruction and education shall be to promote the general development of children with a view to making them public spirited, creating citizen ... Primary school shall provide all pupils with a standard course of studies, comprising a knowledge of nature and community life, the history and culture of Poland and of making, an introduction to techniques and technology; preparation for the world of work and for participation in community and cultural life, preparation for admission to vocational elementary schools, technical colleges, or general or vocational secondary schools or for continuing one's education in the world of work and obtaining qualification on the job.

Curriculum is the same for all primary schools throughout Poland, regardless of the number of classes in the school or its environment, and is drawn up by the Ministry of National Education. However, in the classroom the teacher is required to individualise the instruction given by an appropriate organisation or work and choice of educational methods and aids Provision is made for classes in the various subjects to include exercises and periods of practical work, in order to stimulate pupils to action and encourage them to think for themselves. The curriculum is designed keeping in view the basic education principles such as methodical and logical approach, clarity of presentation, and the need to adapt content and methods to the pupil's level, making them to participate actively in the entire teaching-learning process.

Curriculum reform has been gradually introduced from 1978 onwards. The first stage concerned the initial preparatory classes, from Grades 1 to 4. The details of the subjects and the number of hours per week assigned in different grades are given in Tables 1 and 2.

TABLE 1
Primary School Grades I-IV in Poland

Subject	Number of Hours Per Week			
	Grade I	Grade II	Grade III	Grade IV
Polish	9	9	3	3
Mature study	0	0	2	2
Geography	0	0	0	2
Mathematics	5	6	6	6
Practical-technical training	1	1	2	2
Artistic education	0	1	1	1
Musical education	1	1	1	1
Physical education	2	2	2	2
Total	18	20	22	24

TABLE 2
Primary School Grades V-VIII in Poland

Subject	Number of Hours Per Week			
	Grade V	Grade VI	Grade VII	Grade VIII
Polish	6	6	5	5
Russian	3	3	3	3
History	2	2	2	2
Civic education	0	0	1	2
Biology	2	2	2	2
Geography	2	2	2	2
Mathematics	6	6	5	5
Physics	0	2	3	3
Chemistry	0	0	2	2
Practical-technical training	2	2	2	2
Artistic education	1	1	1	1
Musical education	1	1	1	1
Physical education	2	2	2	2
Defense preparation	0	0	0	1
An hour at the disposal of a grade master	1	1	1	1
Total	28	30	32	33
Elective subjects				
One of the west European languages	0	3	2	2
Choir	0	2	2	0
Musical groups	0	2	2	0
Extra exercises in physical education and sports	2	2	2	2

The Secondary Stage

In the USSR, in Classes 5 to 7, the syllabus listed eight sections: woodwork, metal work, work with textiles, culinary skills, everyday repairs, agricultural skills (looking after animals and growing plants), and agricultural technology. The aims of instructions at this stage were that

pupils understood the importance of industry and organisation of the Soviet economy, developed creative powers and good working habits, became acquainted with a wide range of trades in order to choose one, and learnt to carry out everyday odd jobs involving general trade skills and working with a wide variety of materials, tools and machinery. The syllabus differed according to the nature of local industries. However, not every child was introduced to each of the eight sections mentioned above.

In classes 8 and 9, there were 272 lessons for labour. The course aimed to arouse socially valuable motives for choosing a profession, acquainting pupils with what jobs existed in their region and informing them about the systems of vocational training. After 51 lessons, the students made a choice of "profile"—a general vocational area rather than a specific trade.

Courses in Classes 10 and 11 were specific and more advanced than in Classes 8 and 9. For example, chemical laboratory assistant, house painter, typists, fashion-model, radio fitter, computer operator, agriculture technician, jointer, etc. However, there were 120 hours of labour practice which was to be carried out in school or in a workshop under the supervision of master technician.

Table 3 indicates the Curriculum for the USSR Secondary General Schools indicating subjects and number of hours per week in Grades 1 to 11.

In China, at the junior secondary stage, the course on labour education consists of basic principles and skills of productive labour and some occupation with a view to laying a foundation for adapting to the future jobs and social life in modern Chinese society.

At the senior secondary level, the curriculum consists of specialised training in skill development and prepares students to meet the requirement of future jobs and shorten their period of adaptation in the world of work.

In the GDR polytechnical instruction in forms 7 to 10 as a component of socialist general education introduced the pupils to elementary connections of technology and production in industry and agriculture. The pupils became aware of the fact that laws of nature, political, ideological and economic objectives as well as moral and aesthetic standards were implemented in technology and production. They learn that technology was not only important for society but that it was also highly gripping and interesting, that its acquisition and further development required hand and creative work. Table 4 indicates the curriculum of 10-Grade General Polytechnical High School. The table clearly shows the subjects taught from Grade 1 to 10 and the weekly hours devoted for each subject.

The subject "Introduction to Socialist Production" (ISP) was divided into the following courses.

TABLE 3

Curriculum for the USSR Secondary General School

Subjects	Number of Hours Per Week in Grades											Total of weekly hours
	1	2	3	4	5	6	7	8	9	10	11	
Native language and literature	7	9	11	11	11	9	6	5	5	3	3	80
Mathematics	4	6	6	6	6	6	6	6	6	4/5	4	60.5
Fundamentals of information science and computer technology	–	–	–	–	–	–	–	–	–	1	2	3
History	–	–	–	–	2	2	2	2	3	4	3	18
Fundamentals of Soviet state and law	–	–	–	–	–	–	–	–	1	–	–	1
Social studies	–	–	–	–	–	–	–	–	–	0/2	2/1	2.5
Ethics and psychology of family life	–	–	–	–	–	–	–	–	0/1	1/0	–	1
Getting to know about environment	1	1	–	–	–	–	–	–	–	–	–	2
Nature studies	–	–	1	1	1	–	–	–	–	–	–	3
Geography	–	–	–	–	–	2	3	2	2	2/1	–	10.5
Biology	–	–	–	–	–	2	2	2	2	1	1/2	10.5

Subjects	Number of Hours Per Week in Grades											Total of weekly hours
	1	2	3	4	5	6	7	8	9	10	11	
Physics	–	–	–	–	–	–	2	2	3	4/3	4	14 5
Astronomy	–	–	–	–	–	–	–	–	–	–	1	1
Chemistry	–	–	–	–	–	–	–	3	3/2	2	2	9 5
Technical drawing	–	–	–	–	–	–	1	1	–	–	–	2
Foreign language	–	–	–	–	4	3	2	2	1	1	1	14
Art	2	1	1	1	1	1	1	–	–	–	–	8
Physical education	2	2	2	2	2	2	2	2	2	2	2	22
Pre-military training	–	–	–	–	–	–	–	–	–	2	2	4
Labour and vocational training	2	2	2	2	2	2	2	3	3	4	4	28
Total	20	22	24	24	30	30	30	30	31	31	31	303
Obligatory Socially Useful & Productive Work	-	1	1	1	2	2	2	3	3	4	4	23
Electives (facultative courses)	-	-	-	-	-	-	2	2	2	4	4	14
Work Experience (days)	-	-	-	-	10	10	10	16	16	20	-	

Source USSR Ministry of Public Education (Feb. 12, 1985)

TABLE 4

Curriculum of the 10-Grade General Polytechnical High School in the GDR

	Grade									
Subject	1	2	3	4	5	6	7	8	9	10
German	10	12	14	14	7	6	5	5	3	4
Russian					6	5	3	3	3	3
Mathematics	5	6	6	6	6	6	6	4	5	4
Physics						3	2	2	3	3
Astronomy										1
Chemistry					2		2	4	2	2
Biology					2	2	1	2	2	2
Geography					2	2	2	2	1	2
Crafts-Shop	1	1	1	2	2	2				
Gardening	1	1	1	1						
Polytechnical instruction							4	4	5	5
Introduction to Socialist Production							(1)	(1)	(2)	(2)
Technical drawing							(1)	(1)		
Productive Work							(2)	(2)	(3)	(3)
History					1	2	2	2	2	2
Civics							1	1	2	2
Drawing	1	1	1	2	1	1	1	1	1	-
Music	1	1	2	1	1	1	1	1	1	1
Sports	2	2	2	3	3	3	2	2	2	2
Hrs per week	21	24	27	29	31	33	32	33	31	33
Electives:										
Sewing				1	1					
Second foreign language							3	3	3	2
Hrs per week				30	32		35	36	34	35

Military instruction . 8 hrs per year scattered throughout the 9th and 10th Grades

- Mechanical technology and practical machines
- Bases of production of a socialist enterprise
- Electrical engineering

The curriculum provides the following items:

- In form 7, introduction to basic techniques such as making of master forms, forming, separating, jointing and surface refining from technical, natural-scientific and economic aspects
- In forms 8 and 9, introduction to the structure and function of machines, the rational use of machines, important machine elements and the control of machines and plants, and introduction to bases of socialist production
- In form 10, introduction to the bases of electrical engineering and electronics with test and measuring techniques, heavy current and light current engineering as themes

Table 5 may give an idea about the pattern of curriculum in Basic Vocational Schools in Poland. The table given is for Mechanics Course. However, the similar pattern is used for other vocational courses also.

TABLE 5

Basic Vocational School (Mechancis' Curriculum) in Poland

	Number of Hours Per Week			Total number of hours per week
	Grade I	Grade II	Grade III	
	Number of weeks of Teaching in a teaching Cycle			
	34	34	34	
Polish	3	2	2	7
Civic education	0	-	3	3
Mathematics	3	2	2	7
Physics	2	2	-	4
Physical education	2	2	2	6
Defence preparation	0	1	0	1
Drawing and theory of machines	4	2	0	6
Electro technology				
Production technology and materials technology	4	4	0	8
Specialisation production technology	0	0	2	2
Occupational safety, health and law	0	2	0	2
Economy of enterprises	0	0	2	2
Practical training	12	12	18	42
Total	30	31	31	92
Elective subjects				
Russian	1	1	1	3
Preparation for family life	1	1	0	2

THE PRODUCTIVE WORK

The Background

Education based on socialist ideology differs in one important respect from western education. Following the revolution of 1917 and Lenin's prescription, the communist society embarked upon a programme of polytechnisation, by which means theory and practice would be integrated within the framework of bringing the school closer to life This would also make possible the widest possible application of scientific principles to everything of matter and mind. Western education by contrast had kept the science distinct from the humanities, and engaged in long debates as to whether the schools were a part of life itself or a preparation for life. Thus emphasis on productive work has been at the centre of socialist educational programmes from the very beginning. There has never been any question of practical work or labour training being only for the less academic children.

The base enterprise of the USSR, the satellite workshops of China, the sponsor factory and improved apprenticeship of the GDR, and the schools run on the industrial premises of Poland are the manifestation of the effective interaction between education and productive work. This clearly indicates that schools in socialist countries are not only teaching units but also production units. This integration of productive work with education has opened the door to concerted forms of development action involving the members of the school system and the local community which is the ultimate goal of education in socialist ideology. The main features of the interaction between education and productive work in the above countries are discussed in the following pages.

Components of Productive Work

Felicity O'Dell classifies labour lesson in three main components: (a) practical skills, (b) socialisation for work and (c) vocational guidance.

- Practical skills are developed to enable pupils to do work with hands, to use tools, to operate machinery and ultimately to work on production or on the farm. This gives them the taste of working life and considerable practical benefit in future life as a worker.
- The second component of the labour lesson is socialisation for work. This aims at developing proper attitude to work and good work habits which will help pupils to become effective and efficient Soviet workers in the future. The other personality traits needed for social life like discipline, team spirit, sincerity, dedication and devotion to socialist ideology etc. are also developed. This component of labour lessons is equally important and in no way less than the practical training component.

- The third component of the labour lesson is vocational guidance. According to O'Dell the concept of vocational guidance in the USSR is different from that of the West. He observes that in the West the aim of guidance is to analyse the interest and abilities of the child in question and then to select a job which seems to fit that individual. In the Soviet Union, on the other hand, the starting point was an analysis of the job, where workers were required. The role of vocational guidance was then to guide school children into those jobs where they were most needed. Much of the vocational guidance programme in the school consisted of talks and visits organised by parents and local workers. This area of labour training is one which comes in for most criticism.

Location of Training

One of the aspects of vocational education, on which a lot of debate has taken place, is regarding the location of training Vocational training can take place in the school, in the enterprise or in a special shop meant for the purpose. In the past, training exclusively within the workplace as an apprenticeship was the dominant mode in many countries. In the last few decades the trend has been to minimise apprenticeship in favour of pre-service. In most of the socialist countries the practice is to provide practical training in specially built training workshops attached to a school, and there is also opportunity for enterprise based training under industrial supervision. The schools and the enterprises work in close collaboration The undertakings equip the workshops and laboratories of the production centres and pay for the services of the instructors and the marketable products of the pupils Thus one finds that a combination of institution based and enterprise based training is in vogue in all the socialist countries.

As a matter of fact the effective interaction between education and productive work depends to a great extent, on the nature, form and degree of collaboration that schools have with enterprises or undertakings where actual production activities are carried out. For example, in China, the school and the industry cooperate with each other in two ways: (a) the factory sets up a satellite workshop in the school where students take part in labour or (b) the school sends students to the factory for a specific period where they follow a master worker to learn the productive process. In the USSR the students were sent to a study workshop set up at a local factory or to an "Inter-school production combine" for their labour lessons. In the ninth year of the secondary school all students had to undergo one month's training in a factory or on a farm. Almost every school in the GDR had a sponsor factory of its own and every class, a sponsor factory team of its own. Heads of schools and the management team of the enterprise took a great share of responsibility in the development of these

cooperative relations. Similarly, in Poland, close contact between school and industry exists. As a matter of fact, some schools are being actually run on industrial premises.

Benefits of the System

The system of interaction between education and productive work prevalent in socialist countries has many advantages over those countries who have ad hoc and fragmented approaches to training and vocational education. Some of the benefits may be described as below:

- Vocational training is relevant to the economy it serves because of the integration of school with economic enterprises.
- General education is now seen to be as important as skills training since it provides the basic flexibility of workers in coping with future change.
- Students are progressively introduced into the world of work, its obligations, duties and realities, and they develop social and mental skills to enable them to cope with the transition from school to work
- The dual system of training with teachers and instructors in the schools maintains up-to-date knowledge and skills within the trades.
- The enterprise patronage for vocational schools ensures a relevant and cost effective training system.

ISSUES AND TRENDS

Training

In the last few years a number of problems regarding the training of citizens for work have been highlighted in press. Some of them are:

- The training imparted is not able to produce people who have enough knowledge of modern technology, on the one hand, and creativity, on the other, for maximising production.
- Products do not have commitment for their work as the society would like them to have. There is general deterioration in this regard.
- Level of academic education given by many PTUs is lower than that given by general secondary schools.
- The extent to which courses actually provide practical training under real conditions varies and is not always adequate.

The 1984 reforms had suggested the following measures to improve the situation:

- Young people should receive their basic labour training from professional instructors in schools rather than older workers directly on the job.

- The number of pupils who leave the general secondary schools after the eighth class to attend a SPTU is to be increased.
- Particular importance is to be given to the development of agricultural SPTUs.
- The need to provide young people with up-to-date labour knowledge and skills is emphasised. The press has recently pointed out that "it is not enough today to know the three Rs, it is also necessary to be familiar with electronics."
- Each school should have close links with either a factory or farm in its locality. These are known as base enterprises whose responsibility is to keep the equipment used for training up-to-date and enlist experienced workers as tutors. The enterprise also pays for the work done and assesses children's skills.
- In the process of integrating general education with productive work at one stage, too much emphasis was given to labour education and the teaching of academic subjects was crippled. As a result the academic standards of students deteriorated. Then there was another trend to ignore labour education and give more emphasis to the teaching of academic subjects.
- In order to solve this problem many educational experts in China suggest structural changes in school education. At present the school structure consists of six years of primary education, three years of junior secondary and three years of senior secondary education. The experts suggest that the duration of primary school should be shortened to five years, that of junior secondary education be extended to four years and no change be made in senior secondary education The four year duration of senior secondary education can be arranged in two ways. One way is to devote the first three years to academic subjects and the last year to productive work. The other way is to provide general academic courses and labour/teachnical courses simultaneously in the ratio of 3:1 throughout the four-year period. Pilot experiments of school system reforms have been undertaken in a few places in China.

Double Certificate Systems

Keeping in view the principle of equal educational opportunity, some of the socialist countries have implemented the idea of "double certificate system" at the school stage. The double certificate refers to the graduation certificate and the labour technical qualification certificate. As a result of this practice, students may go for higher education or enter the world of work. This system demolishes the idea of streaming and keeps the option open between higher education and entry into job.

Institutionalisation of Collaboration

There is a trend in most of the socialist countries to institutionalise the enterprise-school collaboration. Vocational schools are contractually linked to enterprises which provide the schools with equipments, permit the use of workshops, and allow the workers to impart practical training to students.

Research

In socialist countries extensive applied and evaluative research is carried out on pedagogical, psychological and technical aspects of vocational education. Most schools have research and information centres for conducting research. Research findings on the linkage between theory taught in schools and training in undertakings in the GDR, low level of skills because of inadequate technical preparation in the USSR and the evidence that the best instruction is obtained when theory and practice are not separated are helping in improving the quality of vocational education to a very great extent.

SUMMARY OF MAIN FEATURES

Philosophically, all the four socialist countries have common ideology based on Marxist-Leninist theory. All of them accept the principle of polytechnical education and emphasise close integration of theory and practice Another basic principle of socialist education is equality of educational opportunity for all citizens. An emphasis on the practical rather than the theoretical aspect has been at the centre from the very beginning of socialist educational programmes. As a result, vocational education is meant only for academically low achiever and it may be considered as a plus point of the system. Productive work occupies a prominent place in socialist philosophy and vividly reflects in its entire educational system and curriculum transaction.

The complete course of the Soviet's 11-year general education schoo. embraced both primary and secondary edcuation. In China, a law of nine years of compulsory education was adopted in 1986 This comprises six years of primary and three years of junior secondary edcuation. The GDR had ten grade general polytechnical high school and Poland had eight grade basic primary school system. This shows that there is no uniformity in the structure of the educational system in different socialist countries. However, a minimum of eight years of schooling is compulsory in all of them. There is a trend of extending the period of compulsory school progressively to ensure job satisfaction and better integration of students into society.

There seems to be a lot of commonality in the curriculum design of all the four socialist countries under study In one form or the other, the concept of polytechnical education, socially useful labour, labour practice and vocational training are included in the curriculum as its integral part. Another feature of the socialist system is the centrally developed curriculum with little scope for local consideration. This is an aspect which has been criticised by western authors. This approach of curriculum development has the advantage of national uniformity but lacks local and environmental considerations. However, there is a trend towards decentralisation and local needs are taken into consideration specially in labour education.

The socialist countries are making serious efforts towards integration of ed uation and training and general secondary education The linkage of school and life is one of the basic principles and important features of the socialist education syustem The duty of schools to prepare students for the work of society is widely accepted, but productive work has a special place in socialist education and indeed in the whole socialist cast of thought Marx and Engels were highly critical about the exploitation of workers and sought to see that the worker was given back the respect due to him/her. In this context inteaction between education and productive work is of great significance. One of the educationists from the socialist block observes: "We are aware of our social task to form a young generation with an allround education, who loves work, who constructs together with all working people, who constantly strives for better results, and who is well prepared for life."

Thus the introduction of productive work in the school system has brought about great changes in the attitude of people, on the one hand, and has prepared them for future life, on the other.

The impact of productive work is not confined only to labour lessons but has influenced the instruction of all other school subjects. In this respect, fundamental laws are not only taught theoretically but, at the same time, the pupils are made familiar with the effects of such laws in the real social practice.

The organisation of excursion is another possibility of linking school and life, which is widely used in the socialist system of education. When the pupils visit enterprises, agricultural production cooperatives, museums, art exhibitions, etc, they get a deeper insight into the complexity of life in the society. Their theoretically acquired knowledge is strengthened and deepened through observation and experiences in practical life.

The introduction of productive work in education has brought the world of work closer to school and filled the gap between theory and practice to a great extent. It has now been clearly established that young peoples preparation for life and work cannot be achieved by the

educational system alone. The world of work has to contribute substantially in this educational venture of society.

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Content Analysis Schedule for Teaching National Integration

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ABSTRACT

The present study was undertaken to prepare a Content Analysis Schedule for teaching and learning National Integration Seven concepts and some teaching points (subject matter) under each concept were pin-pointed, on the basis of a study of related literature The main objective was to quantify these elements or teaching points by taking the consensus of the experts. The elements were arranged in a schedule format and the experts graded each item on a 5-point scale. The items showing low mean scores were rejected during the pre-tryout. During the final tryout, the items showing high mean scores and low dispersion were retained. The concepts and teaching-points suggested in the schedule, indicate the complete content to teach national integration in a phased manner.

CURRICULUM research has gained a major emphasis in the area of educational research in recent time and this is highly related to the development of pupil The purpose of such researches is for curriculum revision in relation to the achievement of certain objectives of education As the word "curriculum" has an expanding and evolving meaning, "curriculum research" has shown a corresponding evolution and expansion and it covers a multitude of very diverse activities. Curriculum analysis, curriculum evaluation, curriculum construction or development are related terms and are very often used interchangeably. In any curriculum analysis or evaluation, "content analysis" of the text is essential Curriculum research can be conducted through content analysis of texts and of

communication materials. In the beginning of the fifties Berelson (1951), Merton (1957) and others defined content analysis as a main technique of communication research, specially used for analysing a propaganda document, a pamphlet, a film or radio programme. The technique was developed in the USA as a branch of social psychology known as communication research and was usually applicable to sociological analysis. It is a research technique for the objective, systematic and qualitative description of the manifest content of communication. It is concerned less with the style of the text than the ideas contained in it—the entities analysed are not usually words but meanings—and often includes themes.

There are other types of content analysis, e g. (1) symbol counts, (2) one dimensional classification of symbols, (3) item anaylsis, (4) thematic analysis, (5) structural analysis, (6) campaign analysis, and so on. The present study comes under the fourth type where the implicit and explicit themes in the text are analysed and the significance of a series of items is dealt with. So long content analysis was taken as a research technique and in recent time it is appreciated as an effective technique of curriculum research: specially, of textbook analysis. Modern teachers take interest in analysing the content of the texts. To be specific, while preparing a unit-plan or lesson-plan, the content of each chapter should be analysed. Such an analysis will enable the teacher to supplement the subject-matter. Organise the content, form the concepts and, finally, achieve the objective in particular. Content analysis can be used in developing and modifying school curriculum at various stages. Thus, content analysis is a technique which a teacher uses for her professional success; and a textbook writer, for textbook revision.

Content analysis can be done informally by the teacher simply by pin-pointing the main teaching-points and subject-matter given therein. Whereas the decisions which are based on informal content analysis what Goode and Hatt (1981) mentioned as "intuitive" lack reliability and validity because of high subjectivity and the absence of any systematic methodology. To obtain reliable and valid results, formal content analysis can be undertaken (Koul 1984). Even Hayman (1968) mentioned about such "forms" as "recording instrument". In recent time Goode and Hatt (1981) have even mentioned that coding is indispensible for content analysis. Generally, coding is done for analysing "frequency" or "consistency or inconsistency" of something. Thematic aspect of content can also be analysed formally by following a "schedule" prepared and coded by the researcher on the basis of quantifying each teaching-point and sub-points Coding may be done by taking experts' responses: how many of them have said that the content reflects that idea, e g. citizenship, socialism or secularism, and so on. The data are empirically verifiable by other observers if the same operations are followed. In order to avoid

confusion, the focus of research should be mentioned clearly. In the present study the focus is on "concepts", i.e. teaching should be ordered to develop certain concepts essential to develop national integration amongst pupils In the field of educational research such use of "form" or "schedule" that too for thematic analysis, is still in infancy It is acquiring more and more popular acceptance because it is technical, objective and further easy for the classroom teacher to analyse her "unit" (Chapter) by following the prepared "Schedule" and supplement the missing links to improve her lessons. The same schedule may be used by different teachers following different textbooks (say, Social Studies) prescribed by different Boards of Secondary Education and thus a comparative study of different texts will not be difficult.

In the National Education Policy (1986), it is mentioned that "the needs and means of establishing a uniform national core curriculum will have to be considered in relation to the objective of national integration" (10 7). Since independence, Indian education has emphasised curriculum development for the promotion of national integration and the Ministry of Education, the NCERT, the SCERTS and other organisations have worked for it But it yet remains to be satisfactorily fulfilled In the Programme of Action (1986) one of the elements of core-curriculum construction is specifically mentioned "national identity" in Indian context, will mean development of integration. Even the Review Committee of National Policy on Education 1986, headed by Acharya Ramamurthy as chairman has quoted in the prologue the importance of development of unity and integrity of the nation which are seriously threatented (1990). Education in general, and textbook, in specific, are the instruments which develop integration amongst people by instilling the elements of national identity in them. Textbooks should be revised and made challenging to face such needs. This study is an effort for such a revision of textbooks at high school level. In a previous study the author discussed about "curriculum construction for the promotion of national integration at high school level" where a tentative syllabus and work plan were suggested on the basis of a study report (Basu, 1986). In another recent study, the author has discussed the selected content of teaching National Integration/ India as a Nation/National Identity, as a topic or unit in Social Studies, at high school level Seven major concepts are mentioned after taking the consensus of expert educationists (Basu, 1990) In this study the author has quantified or coded each concept and sub-points (subject outline) on the basis of statistical analysis, and the report is titled as "Content Analysis Schedule for Teaching National Integration". Now this "Schedule" will be a tool in the hands of a prospective social studies teacher who will teach the unit on national integration (e g civics textbook for Class IX Chapter IV, prescribed by the Board of Secondary Education, Andhra Pradesh).

CONCEPTS

Seven concepts are decided upon on the basis of a review of related literature and taking the consensus of educationists:

(i) *Nation, Nationalism and Internationalism:* Though India is a multi-cultural nation, its cultural ties show homogeneity. Further, nationalism, in the true sense of the term, leads people towards developmental work, increases productivity and helps promote international understanding.

(ii) *Socialism, Secularism and Democracy:* That socialism can be achieved by rapid economic development of the country; that in a democracy "accountability" of Government is very important; that elections and party system are the foundations of a democracy—all these factors led the Indian constitution to adopt a federal structure and parliamentary form of Government with unitary implications, etc that the pupils should be made aware of.

(iii) *Federalism, Single Cttizenship and Single Judiciary (Unitary) System:* The federal structure of Government ensures regional autonomy but, unlike other federations India has strong centre but with state's autonomy Even the duality of laws is divided between the centre and the state government through such lists as the Central list, the State list and the Concurrent list.

(iv) *Centralising Tendencies:* Some constitutional provisions which indicate centralising tendencies should be mentioned in the text, e.g. protecting minority rights, emergency provision, etc

(v) *Centralised Administrative and Defence Services:* That the selected candidates for Central Services follow some "code of conduct" they are posted in different parts of the country and they work for people without any regional biases. The implications of such policies for mobility of people and cultural exchanges are important.

(vi) *Integration:* Some unifying factors, for example, its peninsular position, compactness, culture, traditions and different subcultures, are unique to India

(vii) *Confidence in Future Progress of India:* The present status of the country and its future prospects should be reflected in the text. Over and above, a confidence about the future progress of the nation and its achievements in different fields should be created in the minds of the pupils.

(viii) Last of all, some extreme concepts or informations which we see in the texts should be moderated by highlighting implications of those concepts or should be deleted completely. Further, complete content to promote national integration should be given to the pupils in a graded fashion, i e. spreading over from classes VIII, IX and X the implication is that learning at the "affective level" requires paced learning and discussion.

Objective of the Study

Broadly speaking, the objective of the study was to have a rethinking on the chapter or unit on "National Integration" or "National Identity" at the high school level Some major concepts were decided upon and they were further analysed into some teaching points or elements (subpoints) which the pupils should know while learning this chapter.

Now, each of these elements may not require equal emphasis while teaching and learning the unit. Hence the study was to indicate how much emphasis should be given to while teaching the unit. To be specific, the main objective of the study was to prepare a schedule on the basis of which the content of the chapter on "National Integration" could be coded.

Further, the pattern of representing the content in this chapter was to be determined by the formation of this schedule.

Tools

Teacher-educators occupy a key role in conducting action research and prepare some tools which may enlighten the teacher-trainees in making use of such experimentations when they go back to their classrooms. Teachers are supposed to analyse the content of the texts or teaching materials (communication materials), before they prepare their unit-plans and lesson-plans. Teacher-educators may convey to prospective teachers, the use of such tools (schedules) which will enable them to pre-analyse their content and plan the unit and sub-units, teaching methods, use of aids and evaluation of the outcome.

Such an effort may also be considered as a professional obligation of teacher-educators to standardise such a tool once it is prepared, instead of letting it loose. Teaching-learning situations will obviously seem meaningful and challenging.

Perspective of the Study

The seven concepts which were decided upon and their sub-points (elements or teaching points) were arranged in a questionnaire form. As discussed earlier, these points were acquired by a study of related literature. A 5-point scale was used for each element indicating the extent to which these elements should be emphasised in the texts while teaching National Integration as an unit Summation of their gradation and mean of the scores were calculated The items which showed very low mean-score (e.g. 2 or less) were rejected for final try-out

The final schedule was prepared on the basis of the results arrived by the pre-tryout. Here, again, a 5-point scale was used and each item was scored on the basis of the grading given by the judges. They had responded against each item by showing the extent to which these

elements should be emphasised in the texts while teaching National Integration or National Identity or India as a nation, as an unit in social studies (in high school classes).

A very selected group of sample was taken. They were specialists in the field of education. Professors, Readers and Lecturers in Education, Sociology and Political Science; and very senior teachers who had many years of teaching experiences, gave their opinions. People from these subject fields were taken into account because they taught the subject at different stages. During pre-tryout opinions of 20 judges were taken. For final coding, opinions of about 60 judges were the "target" but finally 50 such complete response sheets were accepted where non-responses were less. They were specialist judges mainly selected from the Osmania University and its constituent colleges, the University of Hyderabad, the NCERT, and the SCERTs of Andhra Pradesh, Tamil Nadu, Kerala, Bombay and West Bengal.

The judges were consulted personally by the researcher. In this type of personal contacts, much of their doubts were clarified though the procedure was time-consuming. The respondents mentioned that "non-response" to some items indicated their non-agreement to those points. Thus, the scope of "non-response" due to confusion in presentation was totally eliminated. Highly specialised judges and their authentic responses to the "schedule" facililtated the consensus process Keeping all these considerations open, 50 judges seemed to be optimum to code the "schedule" and secure objectivity of the tool.

Analysis of the Data Collected

A frequency list was prepared for each item collected from 50 response sheets Arithmetical mean and standard deviation (SD) for each item were high and the dispersions low. Those items were accepted for the purpose of evaluating the content Though most of the items showed SD from 1 to 1.4, still in a few cases SD was 1.5 and above.

Table 1
Item-wise Analysis

Concept No	Item No.	Analysis from the Response-sheets	Remark
I	8	Scored high by people of Education and of Sociology, and scored low by people of Political Science.	May be retained
II	11	Scored high by people of Education, and scored low by people of Political Science and Sociology	May be retained
III	3	Scored high by people of Education, and scored low by people of Political Science and Sociology	May be retained

Concept No	Item No	Analysis from the Response-sheets	Remark
IV	3 & 4	In both the cases, dispersions do not show any subject group clusters, i e high scoring and low scoring groups consist of people from different disciplines	May be eliminated
V	1	Scored high by people of Education, and scored low by people of Political Science	May be retained
VI	12	The mean score is low and dispersion high	eliminated
VII	2	Scored high by people of Education, and scored low by people of Political Science	May be retained

Table 1 shows item-wise analysis of some exceptional cases The cases were identified where dispersions were high (1.5 and above) and further item-wise analysis was done for such cases. In some such cases the response sheets showed that the frequency of respondents varied according to the discipline-wise groups. For example, where the Political Science specialists agreed on some points, the specialists in Education agreed totally amongst themselves. The two groups showed opposite opinions in their responses While one group thought that the item was highly important in promoting integration, another subject group considered the item as "less important". The item may be retained as having consensus of the experts, but such consensus also indicates differences of subject specialists in valuing the item. For example, item nos. I-8; II-11; IV-3; VI-12 and VII-2 (see Table 1) where dispersions show polarisation of distribution according to subject groups. Further statistical analysis may be done to prove the reliability of such polarisation, or subject-group analysis can be done separately, by taking more samples in each group.

The "rationale" behind such results must be that different subject groups differ in their value pattern. Such cases may be retained by the evaluator in the schedule for final evaluation of the "content" Here the cases have consensus among the people belonging to the same subject group.

In some other cases, for example, item nos IV-3 and 4, dispersion is high but item-wise analysis does not show any such group preferences. It may be because people differ in their opinions or they are not sure about the importance of such items. While dispersions are very high, the items are deleted They do not have consensus

Take another case of item no 12 of Concept VI where mean score was low and dispersion high, i e most of the judges scored it low. Such items should be elimnated for the purpose of evaluating the "content" because they do not have consensus for acceptance. Cases like this will be generally very few.

From the above analysis it is clear that the internal consistency or reliability of each item is found out by calculating the mean and SD of it. Quantification of items is done, taking the consensus of the specialists. The accepted items in the "Content Analysis Schedule" are reliable and have consensus of the specialists.

Conclusion

. Almost all the items are accepted for final schedule, except a few which have not secured sufficient consensus of the specialists.

As a concomitant result of the study we have found that sometimes values are developed among us due to our association with a particular discipline (or being in a subject group) We judge items in a particular fashion. Anyway, consensus of a subject group should be taken into consideration while evaluating a text or content. Items showing low mean score cannot be accepted because more people have scored it low.

Now, this content analysis schedule is a tool in the hands of a prospective social studies teacher who can analyse the content of her textbook (eg chapter IV of the Civics textbook for Class IX, prescribed by the Board of Secondary Education, Andhra Pradesh). She can supplement the content, organise her teaching methods by giving more weightage to these points. She can even revise the unit in a proper fashion.

Such quantification of the teaching points (elements) for teaching "National Integration" is quite new and "unique" in the field of curriculum analysis or evaluation and this will be of immense use to secondary teachers and textbook writers. As discussed over and again, it will also be a handy and dependable tool to revise the unit on "National Integration" when it become necessary.

Follow-up Work

The same schedule (tool) may be further standardised after a lapse of time The same or a similar group of sample may be taken If the findings agree with the earlier results, the schedule stands the test of reliability.

The same schedule without coding will be given to experienced teachers who are actually teaching the chapter (or unit) to high school students Here, they will be asked to respond against each item on a 3-point scale, for example, whether the item is reflected "to a great extent" "to some extent" or "not at all" in their respective textbook. Each item (teaching point) will be valued on the basis of the teachers' response. The pooled scores (all the teachers together) of all the items together against each concept will indicate how much that particular "concept" is reflected in that text. Similarly, the score of all the concepts together will indicate whether the chapter is properly represented in the text.

The same tool may be used to evaluate different textbooks (particular unit) prescribed by different Boards of Secondary Education and a comparative study of these texts (in relation to this chapter) will be possible. Such a study may ultimately lead to revision of the chapter, if necessary

Similar technique may be used by teacher-educators or curriculum researchers for developing a schedule for other units also, say, for teaching "socialism" or "citizenship"

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Research Notes

Relationship of Power Motive with Prosocial and Helping Behaviour

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PROSOCIAL behaviour as defined by social psychologists is a positive form of behaviour, reflected in a variety of acts, such as helping, aiding, denoting and sharing. These acts have a positive consequence and are, therefore, called prosocial behaviour. They refer to actions pertaining to self-sacrifice that benefit others. Social responsibility entails that he behaves in the "right" way, which means expenditure of energy for the good of others Although prosocial behaviour does not benefit others, it does not apparently benefit the person who performs it.

There are generally two kinds of prosocial beheviours: (1) where a person is suddenly confronted with the possibility of helping a stranger in distress, (2) where a crime is committed and the person is required to make certain decisions in order to resist temptations of gratifying some of his immediate needs (Baron and Byrne, 1988).

There are quite a few factors that affect prosocial behaviours, some of these are situational factors which influence the manifestation of prosocial behaviour, like bystander effect, characteristics of the benefactor such as emotions, stage of moral development, need of approval, etc. The bystander effect refers top situation where there are a number of potential

helpers, and the presence of several helpers diffuses the responsibility of the potential helpers, hence the help is less likely to be rendered Latane & Darley, 1970). But on the contrary, it has also been suggested that in situations where social responsibility is the normalistic belief of the group, the presence of others in fact increases the probability of prosocial behaviour (Yinon et al 1982)

It revealed that the more unpleasant or anxiety evoking the prosocial act was, the more rewarding it was, because it reduces a high level of drive (Piliavin, Callero & Evans, 1982). By using a kind of bystander calculus, the bystander is likely to help if the cost of helping is less and benefits more, otherwise he may pass on the responsibility to others and escape the unpleasant situation It is also suggested that motivation to help is mediated by affective reactions, i e. if help is sought and the cause of the need of the person is uncontrollable, then the resultant emotion is "pity", which leads to helping behaviour. Similarly if the cause of the need of the other person is controllable by the helper, then the resultant emotion will again be leading to helping behaviour. As opposed to the emotions of "pity" and/or guilt, if the resultant emotions is that of anger, then help will not be offered (Bettancourt, 1983; Reisenzein, 1986). In another situations if one feels personally responsible, he may feel guilt leading to helping behaviour. Need for approval is another factor affecting prosocial behaviour (Satow, 1975). Dispositional empathy refers to the tendency to respond to the world from the perspective of others (Chlopen et al , 1985).

Still the relationship between power motive and helping behaviour is not very clear. On the one hand, helping, assisting and supporting is an integral part of the scoring system of a n-power developed by Winter (1973). It has also been found that high power motivated persons are attracted towards those professions which involve giving advice and helping others, such as teaching, psychiatry which not only involve express intentions to help but also power relationships (Winter, 1973, Szaz, 1970) It is, therefore, suggested that helping may be an alternative mode of power expression, especially in India, and this needs to be investigated. But, on the other hand, these findings are not unequivocal A number of researches show that high power motivated persons do not offer unsolicited help (Winter, 1973). Expression of n-power through helping behaviour was found to be associated with feminity, whereas masculinity and extroversion were related to assertiveness indicating preference for direct means of gaining power (Mirschowitz, 1983). High power motivated persons also try to build a power base and try to keep smooth relationships within the group (Haley, 1969).

Thus it was planned to investigate whether helping and other prosocial behaviours are means of expressing power need and, if so, whether this manner of power expression is used more often by some people.

METHOD

Initially a pilot study on a small sample of 40 students was conducted to determine the extent to which prosocial behaviour was evidenced by high and low power motivated subjects. The results indicated that high as compared to low power motivated subjects were more inclined to offer help Thus a detailed study was planned and conducted

A verbal measure was constructed with statements involving situations calling for prosocial behaviour, i e where help was needed or requested, or where a wrong doer had to be stopped from victimising someone, with a five point scale. It contained 33 such statements. The aim was to find out the differences in helping behaviour under varying demands on the helper. A further exercise was, therefore, undertaken and two other forms of the measures already constructed was developed, taking the same situations as described in Form I or neutral conditions but with increased risk for the helper. These three forms differed in the conditions in which help was sought. Form I did not involve too much inconvenience or risk. In Form II the same situations were slightly changed so that the cost to the helper was increased, making it a moderate cost condition. In Form III helping entailed undertaking high cost.

The validity and reliability of these three questionnaires were tested and found to be high

PROCEDURE

TAT was administered to 54 (male and female) school teachers in session I. The subjects were then divided into six groups according to their high and low n-power scores and the conditions requiring help. Care was taken to take approximately equal number of subjects for every condition calling for help High and low power motivated subjects were, however, assigned to any of the three conditions of risk randomly The subjects gave their responses on a five point scale.

SCORING

Scale items were answered on a five point scale. The total score of a subject on the verbal measure of prosocial behaviour was the sum total of all the scores on all the questions Thus the maximum possible score could be 165 and the minimum 33.

RESULTS

The mean and standard deviations of the subjects having high and low power motivation were calculated for three conditions and are presented in Table 1

TABLE 1
Mean and Standard Deviations of Prosocial Behaviour Scores for High and Low Power Motivated Subjects in Three Conditions of Helping

		Condition I	Condition II	Condition III
High n-power subjects	Mean	130 444	124 666	131 111
(N for each cell = 9)	SD	10 816	10 684	5 696
Low n-power subjects	Mean	120.888	107 111	111 000
(N for each cell = 9)	SD	10 332	4 175	12 454

Total N = 54

Table 1 reveals that the high power motivated groups of subjects exhibited prosocial behaviour to a greater extent in all the three conditions A 3 x 2 analysis of variance was carried out and the findings are presented in Table 2 Significant difference was found to the extent to which high and low power motivated groups of subjects engaged in prosocial behaviour. The main effect of conditions is significant; ($F(2,48) = 4.23$, $P < 0.05$) The greatest amount of prosocial behaviour was exhibited in condition one ($M = 124.666$, $N = 18$) where the helping behaviour was

TABLE 2
Analysis of Variance for Helping Behaviour

	SS	df	Ms	F
A (Category high and low n-power)	3344 9	1	3344 9	32 867
B (Conditions of helping)	861 37	2	430 685	4 23
AB (Interaction)	136 45	2	68 225	NS
SS W Cell	4885	48	101 77	
Total	9364 17	53		

not of much cost to the person giving help. Surprisingly, the next condition which evoked prosocial behaviour was condition three ($M = 121.055$, $N = 18$) where the cost of such behaviour increased considerably but the need of the victim was also prominent Least prosocial behaviour was evoked by condition two ($M = 115\,888$, $N = 18$) where the cost of prosocial behaviour was higher than in condition one and the need of the victim was also not very salient. The interaction effect was not found to be significant which means that high power motivated groups of subjects exhibit more helping behaviour and thwart a wrong doer in all the three conditions as compared to low power motivated persons Further, more help is forthcoming when the cost of helping is less or when the need of the victim is very salient

DISCUSSION

The present study explored the relationship between power motive and prosocial behaviour. The results indicated the significant main effect for n-power showing that high power motivated persons express greater willingness to help, irrespective of situational factors.

Recent research on prosocial behaviour has drawn our attention to the benefactor's characteristics, sex differences in helping behaviour and role of benefactor's nurturance need (Pandey and Griffitt, 1977). Power motive may also be another such characteristic, as it was found earlier. Subjects high on prisoner's dilemma type game had expressed a co-operative intension, and if met by a co-operative opponent, they behaved more and more competitively (Schmalt, 1987).

The present findings that high power motivated persons help others may be explained on the basis of perception of control (Schmalt, (1987), because helping generates a feeling of control. By helping others they feel that they are controlling the contingencies for others. Control in interpersonal situation is concerned with changed action contingencies between action and outcomes. It had been noted earlier that subjects with high n-power tend to judge themselves as more responsible for an event, because it gives them a feeling of control.

The present results confirm the hypothesis that high power motivated persons show significantly more prosocial behaviour. A number of other studies have indicated that persons high in n-power are not overly worried about the opinion of others, rather they are more concerned with raw experiences which stress mastery of physical risks and challenges (Fersch, 1972). This has also been exemplified in a tendency to choose relatively less popular position in a discussion (McClelland and Teauge, 1975).

Another finding of this study is that the main effect of the conditions of helping is significant. It has been suggested by earlier workers that a joint consideration of trait disposition situation and helping behaviour expected in particular situation is needed (Pandey & Griffitt, 1977). Such an analysis was carried out in the present study The results show that maximum help was offered in condition I and then in condition III and that minimum help was offered in condition II. These findings suggest that the cost of helping to the helper as well as the need of the person seeking help, influence the amount of help being offered. In condition I the cost of offering help is minimum, hence this condition only avenges pity. In condition III, on the other hand, the cost of helping increases substantially as does the need of the victim. It appears that in such condition the tendency of high power motivated persons to attribute greater responsibilities of events to themselves induces them to offer greater help (Steiner, 1987). It has also been noted by other workers that people are more likely to help if they feel responsible for others (Moriality, 1975).

The situations depicted in condition III may also arouse guilt feelings if help is not rendered. For example, failing to inform the police about the neighbours who plan to kill their daughter-in-law, will arouse guilt if this really occurs. It is suggested that these types of situations arouse more pity and guilt in high as compared to low power motivated persons because they attribute greater responsibility to self for events occurring around them (Schmalt, 1987) Since conditions which arouse pity or guilt result in actions towards the victim (Weiner, 1987), helping and restitution often occur as a result of pity and help in both conditions I and III, it can be assumed that these conditions successfully aroused pity and anticipation of guilt, leading to helping behaviour. Further investigation, however may be carried out to determine the differences in experience of pity and guilt between high and low power motivated persons, in condition I and III.

It has been noted earlier that high power motivated persons try to expand their "network" of social contact (Winter, 1973). If this is so, then it is not surprising that people with high n-power engage in helping behaviours as this may increase their network of social contacts. Nevertheless high power motivated persons are also seen as ineffective helpers (Kolb & Boyatzis, 1970).

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Impact of the Handicapped Child on Siblings

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It is generally said that the birth of a handicapped child is a crisis for the family as it increases various problems, such as economic hardships, parental feeling of guilt and anxiety, and negative reactions of society towards the family with a handicapped child Thus, it is not only the handicap of a child that affects the family adversely, but also negative attitudes and reactions of society An adverse effect of the birth of a handicapped child is experienced not only by parents, but also by siblings. Although there is a relatively large body of literature pertaining to parental reactions to the handicap of a child, there is much less information about the reactions of siblings of handicapped individuals. Hallahan and Kauffman (1991) cited research findings of Seligman and Darling in 1989 and Senapati and Hayes in 1988, which found that some siblings had problems in adjustments, some had no problem and some were benefited by growing up with handicapped siblings.

Effects of a Handicapped Child on the Family

The birth of any child can have a significant effect on the dynamics of a family. All members of the family must undergo a variety of changes to adapt to the presence of a new member. If the child happens to be handicapped, the whole family experiences both emotional and psychological distress. Hallahan and Kauffman (1991) and Kew (1975) pointed out that the birth of a handicapped child can, without a doubt, have far-reaching effects on every conceivable area of personal and family life. According to Featherstone, "a disability usually shifts the organisation and expectations of parents and children" (p. 141).

The impact of a handicapped child on a family depends on various

factors, such as knowledge and experience of disabilities and their severity, previous contacts with handicapped persons, etc. It does not, however, mean that the handicap of a child will not shock the family; it simply means that knowledge and experience of disabilities will lessen the intensity of emotional disturbance of the family. Nevertheless, the initial shock caused by the handicap of the child on the family cannot be ruled out. All parents expect their offspring to be healthy and normal. Therefore, if there is anything contrary to the expectations of parents, it is bound to be disappointing, particularly when the child happens to have a serious handicap.

Some children are born handicapped whereas others acquire it after birth. The handicap of some children can be cured, whereas others remain permanently disabled. The emotional distress of parents and other family members depends on whether the handicap is curable or not. If the handicap is from the birth and is incurable, it can leave lasting sadness and distress with parents and other members of the family. On the other hand, if there is a possibility of a cure, it gives a sense of hope to parents and other members of the family

The impact of the presence of a handicapped child in the family can clearly be realised through distress which parents, siblings and other members of the family undergo Hallahan and Kauffman (1991) stated

> When talking about the impact an exceptional child has on a family, we are talking to a great extent about feelings—the feelings of parents toward the child and toward society's reactions to the child, the feeling of the child's siblings toward the child and society, and the feelings of the disabled child (p 449)

Apart from the actual effects of the handicap, social attitudes and reactions can further add to emotional distress already on the family (ibid.) Baxter (1989) found that the parents of the mentally handicapped children suffer stress because of stigmatisation resulting from social reaction.

The extent of the dismay that parents experience is determined by the severity of the handicap of a child. A severe mentally handicapped child or severe multihandicapped child will require much more care and attention for the rest of his/her life than a child with mild or moderate handicap. As soon as parents come to know that their child is handicapped, they are likely to be shocked and dismayed. This shock induces the feelings of guilt, fear, anxiety, disappointment, etc. These feelings are natural and they are likely to persist for a long time. The feeling of guilt can lead the parents to overprotect the child, whereas the feeling of shame can lead to outright rejection of the child (Kew, 1975). After the initial shock is over, the emotional relationship between the handicapped child and the parents tends to develop. The parents pay an increasing amount of attention to the handicapped child to the extent that the nonhandicapped siblings begin to feel neglected. This unintentional neglect can create disappointment in siblings (Kew, 1975).

Siblings' Reactions

Research findings on the reactions of the siblings of the handicapped are relatively few. What is available, however, "indicates that siblings can, and frequently do, experience the same emotions fear, anger, guilt, and so forth that parents do" (Hallahan and Kauffman, 1991, p. 452). A literature review by Vadasy, Fewell, Meyer, and Scholl in 1984 revealed increased vulnerability of the siblings of the handicapped to stress and other problems (Gallagher and Bristol, 1989). In some ways siblings may have an even more difficult time than their parents in coping with some of these feelings Being less mature, they may find it difficult to put some of their negative sensations into proper perspective. Children may also find it difficult to discuss feelings with others They may be uncomfortable asking their parents the questions that bother them For example, whether they will be called on to take care of their brother or sister after their parents die (Hallahan and Kauffman, 1991).

Kew (1975) pointed out that there can be two approaches to the handicap Firstly, the "concentric" approach whereby the focus of attention is the disabled child. Secondly, the "family as a group" approach which concentrates on the family as a whole The consequences of the first approach are likely to invite negative reactions from siblings as they tend to be neglected in this approach. The psychiatrist Elva Poznanski claimed that "child psychiatrists see more siblings of the handicapped children themselves" (Kew, 1975, p 9). Breslau and Prabucki (1987) substantiated these findings and stated that the siblings of the disabled showed increases in depressive effect and social isolation with a control group of ordinary children Poznanski further confirmed that the siblings of the handicapped child were neglected because more attention was focused on the handicapped child. She said: "the relationships of the mother with her other children often become distorted, at times severely, because of the extra times and attention the handicapped child requires" (Kew, 1975, p. 10). The other children can interpret this as being less loved For parents who have other problems, such as marital disharmony or personality difficulty, or lack of sensitivity to their children's emotional needs the presence of a handicapped child may aggravate unhealthy relationships among family members. It has been observed in some of the research findings that rivalry behaviour is more prominent when the two children are close in age The rivalry can occur due to parents excessive attention to the handicapped child, and neglect of other siblings. This can result in jealous and hostile behaviour from the sibling and overprotective reaction of parents to control such jealous behaviour (Kew, 1975).

Kew illustrated the research findings of Coleman in 1967 in England, and Schreiber and Feeley in 1969 in the United States, who studied groups of teenage siblings of the handicapped. The studies concluded "that these

children harbour many fears and anxieties relating to handicap" (p. 10). Tizard and Grad in 1961 and McMichael in 1971 conducted surveys and found that some siblings had problems clearly related to the impact of handicap on their families and that quite a large number of siblings were emotionally disturbed (Kew, 1975). It was further pointed out that if there are disturbances in the siblings of the handicapped, these normally coincide with disturbances in their parents. Graliker, Fishler and Koch in 1962 in a study of the families of mentally retarded children found that sibling reactions were related to parents' reactions to the abnormal child, in cases where the retarded child was accepted by the parents, all the siblings showed no disturbance at home or school or in their social activities (Kew, 1975). Grossman in 1972 also found that the strongest single factor affecting the normal siblings' acceptance of his/her retarded brother or sister was parental feelings and reactions (Seligman, 1983).

Quite a few studies reveal that non-disabled siblings are aware at an amazingly early age that their brother or sister is different in some way. As non-disabled siblings grow older, their concerns often become more focused on how society views them and their disabled siblings Thus, most of the reactions of siblings of handicapped children are the result of negative attitudes of society (Hallahan and Kauffman, 1991).

Grossman in 1972 found that some siblings of the mentally retarded were benefited from their handicapped brother or sister, whereas other siblings faced problems (Seligman, 1983). Farber in 1959 and Cleveland and Miller in 1977 also found that siblings of handicapped individuals were benefited from their experience, and that they enjoyed good relationships with their other siblings. They faced no embarrassments with regard to their siblings being handicapped and their school experiences were not affected (ibid). McConachie (1986) reported that generally siblings did not seem to be adversely affected by the increased task involved in carrying for a mentally handicapped child. Graliker, Fishler, and Koch in 1962 interviewed normal teenage siblings and concluded that "in no case did the teenager feel burdened with responsibility for the retarded child" (Seligman, 1983, p. 161) Simeonsson and Bailey pointed out in their literature review that the assumption that siblings are inevitably affected negatively by the presence of a handicapped child is incorrect. When siblings were given direct responsibility for the care of the handicapped child, they tended to express satisfaction, particularly when the results of their efforts helped the handicapped child (Gallagher and Bristol, 1989)

Female siblings, however, are usually found burdened with the care of handicapped brother or sister Breslan, Weitzman and Messinger in 1981 studied 239 families of disabled patients with a wide age range (3-18) and found that older sisters were under more stress than older

brothers. Vadasy et al, in 1984 in their review also suggested that the sister of a handicapped child appears to be most vulnerable (ibid) This discrepancy identifies a need for further intensive research in this area In the United Kingdom older sisters are expected to take the responsibility of the surrogate parental role of the handicapped individual after the death of parents Interestingly, in India, the situation is different. Society expects the male siblings to take responsibility of the handicapped individuals. Of course, sister plays an important role in the care of handicapped sibling before her marriage.

SIBLINGS' ADJUSTMENT

Siblings of handicapped children, perhaps, experience the same amount of pain and despair as their parents do Like parents, siblings too find it difficult to adjust to the crisis caused by the handicap of the child. Some can adapt well, whereas others find it difficult There are two factors which play an important role in the adjustment of siblings to the crisis. These are (1) parental support and (2) emotional stability of siblings However, development of positive attitudes towards the handicapped child largely depends on the parents' attitudes toward the handicapped child and non-handicapped children. As stated earlier, overprotection or outright rejection of a handicapped child has serious repercussions on the attitudes of the siblings If the handicapped child is over protected and other children receive less attention, they feel neglected. Consequently, they develop negative attitudes towards the handicapped child who, they think, is the cause of their deprivation of parental love.

Hallahan and Kauffman (1991) identified three situations, as reported by Simeonson and Bailey in 1986 and Stoneman, Brody, Davis, and Crapps in 1988, that can make it difficult for a child to develop positive attitudes towards their disabled siblings· (1) when two siblings are close in age, there are more chances of conflict, (2) siblings of the same sex are more likely to have conflicts; (3) older nondisabled female siblings are likely to have negative attitudes during adolescence on account of the responsibility of surrogate parental role. Pointing our negative effects of handicaps, Poznanski said: "Because handicaps are long term problems, they can affect the overall emotional growth and development of the other children in the household" (Kew, 1975, p. 128)

There can be two types of stress on siblings. (1) when siblings of the handicapped child are expected to achieve success in all areas to compensate for the handicapped child, and (2) when they are expected and forced to do too much for the handicapped child. In such situations the child does not find enough time to play with other children and socialise himself/herself (Kew, 1975). He further stated:

> Siblings of the handicapped, especially when the handicap in question is mental rather

than physical, are often not merely deprived of a normal sibling relationship but are engaged in a sibling relationship that actually holds them back (Kew, 1975, p 134).

Many siblings, as Kew (1975) pointed out, face enormous social and emotional problems in relation to handicap. Grossman, in 1972, indicated that some siblings may have suspicion of becoming handicapped in the future (Seligman, 1983). Handicapped children with aggressive behavioural disorders may also cause fear in siblings. Such behavioural disorders can adversely affect the siblings' social status and emotional adjustment. Older children are aware of the social stigma of having a disabled sibling which can affect their relationships with their friends (Kew, 1975).

Seligman (1983) maintained that if parents of the handicapped child do not explain to the siblings about the handicap properly, the siblings are likely to fantasise about it in their own way. Similarly, San Martino and Newman in 1974 stated: "A normal child's adjustment to the presence of a "family style", which is reflected in attitudes and fantasies, spoken and unspoken, of other family members. Siblings of retarded children develop fantasies that help explain the meaning of retardation, its possible causes, and what it might mean for themselves" (Seligman, 1983, p. 157).

These unexplained fantasies can cause maladjustment of siblings of the handicapped children. Featherstone (1980) pointed out that in the event of a disability, young children may be concerned about "catching the disability". Anxieties are increased when normal siblings learn that the disability was caused by a disease like rubella or meningitis Marion in 1981 supported Featherstone's observations by pointing out that younger normal siblings might have anxieties that they would become blind or deaf in the future. Marion further noted that as children grow into adolescents, they may have fear of becoming the parents of a handicapped child (Seligman, 1983).

Many of the anxieties are the product of social prejudices For instance, siblings of some disabled children may find it difficult to get an appropriate partner for marriage (Kew, 1975) In India too, families with mentally handicapped children face this problem, particularly in arranging the marriage of female sibling. It is worth mentioning here that in India most of the marriages are arranged by parents of both sides. The bridegroom's family in particular may be apprehensive of having handicapped children in future if they married their son to a family where one of the siblings is handicapped. These anxieties, including that of marriage, exaggerate the problem of adjustment for the siblings of handicapped children.

Kew (1975) mentioned the following factors which can affect the adjustment of normal siblings.

1) *Nature and degree of handicap*· If the child is severely retarded or multihandicapped, more attention and more care is needed. As a consequence of this, siblings may have to give more time to the

handicapped child, which, in turn, will affect their process of socialisation.

2) *Age of the siblings:* Younger siblings are more affected if their brother or sister is handicapped. If a sibling is older, say 16 or 17, he or she is less likely to be affected by the birth of a handicapped baby.
3) *Sex of the sibling:* Female siblings are most likely to play an important role in the care of the handicapped child, and consequently, they are likely to be burdened by the expectations of parents. Sutton-Smith et al. in 1964 stated that the sex of a sibling has strong effects on adjustment, anxiety and interest inventories.
4) *Size of the family* If the family is small, sibling is likely to be more affected because of the help needed for upbringing the handicapped child
5) *Religion as a force in the family:* Zuk in 1970 found that there was more acceptance of handicapped children with catholic mothers than non-catholic mothers.
6) *Substitute parent figures:* Siblings who are neglected as a result of a handicapped child's birth, develop a close relationship with an aunt or another member of the family.

Though these research studies are interesting, they suffer from three limitations: (1) Only retarded children have been studied. (2) Research results have not been confirmed or denied by replication. (3) There is no way to find out the feelings of those who did not respond to the studies (Seligman, 1983)

Attitudes of Siblings Towards the Death of a Handicapped Child

The research findings in the United States and the United Kingdom confirmed that the death of a handicapped child poses a considerable strain on a sibling and can be a source of lasting distress. It has also been found that a child's response to the death of a handicapped sibling differs from his response to the death of other persons, such as his parents. Some times the young sibling may feel that the handicapped child's death was caused by his own rivalry-bred hostile thoughts. This gives rise to feelings of guilt. These can be expressed in many ways, such as suicidal thought, "depressive withdrawal, accident prone behaviour, punishment seeking, constant provocative testing, exhibitionistic use of guilt and grief, massive projection of super-ego accusations and many forms of acting out" (Kew, 1975, p. 107). Parents play an important role in imposing the feeling of guilt on the able bodied sibling. Though the statements leading to the feeling of guilt are unintentional, they can have a serious impact on the perceptions of the child The parents may unintentionally blame

the sibling for not having done enough for the disabled child when he was alive. These remarks hurt the feelings of the child and can lead to lasting distress. Kew (1975) stated.

> The parents' preoccupation with the deceased child can easily lead to a worse fate for the sibling than merely the suffering of temporary neglect. If parents do not quickly resolve the conflicts that have been generated for themselves by the death, they will in time inevitably promote a situation where their other children are unwittingly made to participate in these conflicts (p. 113).

Conclusion

The author of this paper feels that research findings in this area are too little to reach any conclusion. There are individual differences among children and, accordingly, they may or may not adjust to the handicapped sibling Therefore, it is wrong to conclude that all siblings are adversely affected by the presence of a handicapped child in the family, as has been indicated by some research findings. There is a need for carrying our research on different categories of handicapped children separately so that the effect of each disability on siblings could be ascertained. Trute and Hsauch (1988) pointed out that most of the investigations that have been carried out concentrate on families which make a negative adjustment to the birth of a developmentally delayed infant. The families which make positive adjustments should also be investigated.

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Video Film Show: A Model for Refresher Training at the Grassroots

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VIDEO is among the few new electronic technologies, which has found an enthusiastic reception in developing countries. Both the ready-made imported movie cassettes and the inexpensive but high quality technology of video recorders are turning up in the most remote areas of the Third World.

Community organisers, schools, artists, government workers and politicians rely on video for the unrestricted dissemination of information at the grass roots level

In poor regions such as parts of India and West Africa, video clubs have sprung up and dozens, even scores of people cram into a room to watch a video movie.

Coming to the people involved in development and community organisation, video has provided a resource of tremendous power the world over for educational purposes sometimes as part of a state educational initiative, other times as an independent local community activity.

"Beyond Today" is one of the videos about Zimbabwe's youth employment problems and rural migration into the towns and cities (Turner, 1990).

UNDP, UNEP and the World Bank, all international organisations, use videos targetted for often highly specific Third World audience (Turner, 1990).

In Nepal, women were helped to learn how they can play an essential role in the development of their communities (Burkert, 1990).

Video has become an indispensable health communication technology

over the past decade. Much like dramatic role plays, participatory videos can invite people to stop outside themselves, analyse their own feelings and actions and practice new behaviours.

Video can train field staff even on complicated sets of skills if procedures are presented clearly without overwhelming details. With a simple stop and start, video can be presented and discussed in segments (Vcellani, Valerie and Rosales, 1992).

Keeping in view the above, a video film on the theme "Low Cost Teaching Aids— Part I" was shown to the Anganwadi workers (ICDS functionaries) at Gadarpur ICDS block in district Nainital, Uttar Pradesh, with the following objectives:

1) To know the information level of the Anganwadi workers regarding low cost local teaching materials.
2) To inform the Anganwadi workers about the availability of various low cost resources in rural settings through film shows
3) To assess the effect of the film on the viewers in terms of the information received by them through the film.
4) To help them explore and visualise the use of such low cost materials from their own village settings.
5) To help them make their teaching effective by the use of low cost aids in view of the limited and scarce resources available to them.

Methodology

Research Design

Pretest-post test research design was followed. The respondents were presented with a pre-test before the film show for testing their information level and then they were post-tested after they viewed the film.

Tool

The data were collected through a semi-structured interview schedule consisting of two parts—background information of the respondents and subject-related questions. The tool was administered to 30 AWW for pre-testing.

Sample Selection

The Anganwadi workers available at the meeting day at Gadarpur block were selected for viewing the film and giving the responses. The viewers consisted of the Anganwadi workers, one superviser and one child development officer. The majority (78.2 per cent) were in the age-group 20 to 30 years. 21.8 per cent of the women were in the age range of 30 to 40 years. While 52.1 per cent were educated up to the 10th standard, 17.3 per cent had studied up to the 8th standard and the same percentage were up to the 12th standard, 13.05 per cent were graduates.

The Video Film

The video cassette film titled "Low Cost Teaching Aids—I & II (T-07-007-01)" was produced by the Centre of Instructional Educational Technology, National Council of Educational Research and Training, New Delhi and distributed through Electronics Trade and Technology Development Corporation The video film which was shown to the group was in the series of five films of 20-30 minutes duration. The educator first introduced the topic and discussed the details by showing the experiment which involved school children, use of teaching aids, their preparation, their use by demonstration, responses and involvement of children in learning situation.

Presentation of Film

All the viewers the Anganwadi workers were interviewed through a questionnaire before the film show. After the collection of pre-test information, the video film show was organised. The topic of the film was introduced by the organiser with a specific purpose. The film was presented before the audience for 20 to 25 minutes at a stretch. After the film show was over, a brief discussion was held and the workers were again interviewed for reporting what they had seen in the film. The responses were recorded after the film show.

Analysis

Analysis was done by assigning frequencies and calculating percentages for each question.

It was found that only 26 08 per cent of them had seen such type of film once and 73.9 per cent were exposed to such film shows for the first time. The majority, i.e. 73.91 per cent rated the film as "very good", 17.39 per cent as "good" and 8.69 per cent "average".

TABLE 1

Frequency Distribution Over the Title/Theme of the Film Understood

S. No.	Topics Listed	No. of respondents	% of respondents
1	Low cost teaching aids	27	58 69
2	Use of waste materials	12	26 08
3	Reading/writing	15	32 60
4.	Learning	15	32 60
5	Teacher's training	02	4 34
6.	Toy making	03	6 52
7.	Teaching play	02	4.34
8	Explanation of rhymes	02	4 34

As indicated in Table.1, the major theme of the low cost teaching aids was understood by 58.69 per cent alongwith reading/writing and learning by 32.60 per cent of the workers. 26.08 per cent reported the use of waste material as the theme of the film However, multiple responses were given to this open ended question. Some understood it as teacher's training, teaching play and explanation of rhymes. For 6.52 per cent toy making was the theme. However, the majority of the respondents understood the theme in one way or the other.

TABLE 2

Frequency Distribution Over the Materials which Can be Used in Teaching Respondents Exposures

S No	Materials (Before exposure)	No. of Expo-sures	% of Respon-dents	Materials (after exposure)	No of Expo-sures	% of Respon-dents
1.	Waste cloth	29	63.04	Waste cloth	29	63.04
2	Needle thread	05	10 86	Needle/thread	15	0.86
3.	Mud/clay	33	71.78	Mud/clay	33	71 73
4	Coloured paper	14	30 43	Coloured paper	14	30 43
5	Pearls/beads	08	17 39	Pearls/beads	08	17 39
6.	Cotton	08	17 39	Cotton	08	17.39
7	-	-	-	Match sticks	46	100 00
8	-	-	-	Match boxes	21	45.65
9	-	-	-	Cycle rods	40	86 95
10	-	-	-	Wooden beads	28	60 86
11	-	-	-	Wires	02	4.34
12.	-	-	-	Rubber pipes	14	30 43
13.	-	-	-	Baloons	22	47.82
14.	-	-	-	Wooden pieces	15	32.60
15	-	-	-	Broken twigs	02	4 34

The use of these materials in teaching was also grasped by almost all the workers. On reviewing Table 2 as many as nine more items were found to be reported by the respondents. Match sticks were reported by all of them. A sizable proportion, that is 86.95 per cent and 60.86 per cent reported cycle rods and wooden beads. Other items like rubber pipes, wires, broken twigs, etc. were also reported by them. The use of these materials in teaching was also grasped by almost all the workers.

Some of the concepts like shape, height, distance, number, etc. which were explained by the educator in the film while using low cost teaching aids were grasped and reported by the workers in post-test (Table 3) as compared to the earlier responses where broad areas of development such as language, cognitive, etc. were reported.

TABLE 3

Frequency Distribution Over the Use of Teaching Aids in Concept Development

S No.	Concept	No. of Respondents	% of Respondents
1.	Shape	36	78.26
2.	Volume	02	4 34
3.	Distance	23	50.00
4.	Angle	25	54 34
5.	Height	21	54.00
6	Number	36	45.65

After the exposure of the film, the workers could locate some of the locally available materials which were of use in the preparation of low cost aids as shown in Table 4 below:

TABLE 4

Frequency Distribution Over Availability of Local Materials from Gadarpur Block

S No	Materials	No of Respondents	% of Respondents
1	Bamboo leaves	12	26 50
2.	Wheat stems	09	19.50
3	Khajoor leaves	20	43 47
4	Grass	08	17 39

The workers were asked to report the problems they faced regarding the availability and use of play materials in their teaching in Anganwadi, as the majority of them were not found using play materials and manipulative materials in their centres (Punhani, Mahajan, 1989). The responses to the questions asked before and after the film show are indicated in Table. 5.

TABLE 5

Frequency Distribution Over Problems Encountered by the Workers

S No	Problems	Before the show		After the show	
		No of Respondents	% of Respondents	No. of Respondents	% of Respondents
1.	Lack of budget	24	52	18	35.29
2.	Problem of storage	26	56 62	26	50.52
3	Lack of training	33	71 90	16	50.90
4.	Purchase and use of decorative materials	19	41.30	19	41 30

It is apparent that after viewing the film, the problems of money and lack of training were solved to some extent. Also, exposure to film gave them an idea of how to prepare some of those low cost teaching aids by utilising waste materials and local craft.

On analysing the findings, it can be said that the major theme and message of low cost teaching aids was received by 75 per cent of the group and the uses of these aids in teaching various concepts was grasped fully by half of the group and partially by 25 per cent whereas 25 per cent of the workers felt the need for replay of the film show. To some extent they were able to identify their problems and also find solutions by the use of local low cost materials, as shown by their responses.

In future as part of refresher training a series of such film shows can be organised on topics of interest to the Anganwadi workers to help them refine their job skills and make them successful in their field with limited resources. Similar type of intervention evaluation study by using video films can be planned on a wider scale. Systematic evaluation of such experiment with video film show in inservice training and refresher training can also be carried on.

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Professional Competence and Psycho-social Traits of Librarians

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LIBRARIANSHIP possesses all the attributes of a profession. It has an occupational identity and developed professional ethics. It has developed its own basic principles and is supported by a body of theoretical and specialised knowledge. It has established a set of applied techniques for practice and formal educational and training programmes. The profession of librarianship has a service orientation to clients. The fundamental element of orientation towards service and use of specialised experitise to facilitate efficient and effective service are the important attributes which helped in the social recognition of the profession.

Ranganathan, speaking about the profession of librarianship in India, stated: "The Library profession is a noble profession. It can do no harm to any body." He gave a message to the new entrants to the profession that they must devote themselves to their work with undivided attention and give the library service to every reader at every time.

Librarianship is, in fact, humanism in practice but libraries are emerging as bureaucratic organisations. "It may be said that bureaucratic structure emanates from a hierarchial position whereas professional control is excercised by an internalised code of ethics and special knowledge by a group of peers or colleagues It is contented that bureaucracy can be particularly detrimental to professions because it limits autonomy." The recognition of a profession having service orientation depends upon how far the professionals care for those for whom the services are intended. Librarians therefore, should not try to develop into a bureaucratically bound class but endeavour to develop ways and means

for the free flow and timely availability of relevant information to those who are looking for it

A profession for its existence and development has to closely perform as per clients needs and timely adapt to changing and new requirements of service. "Primarily service oriented professions are generally more susceptible to sudden technological changes and library and information science is no exception." It is, therefore, essential to keep a constant watch on new and emerging technologies and examine and adopt the appropriate ones for improvement and cost effectiveness of the services.

A library is not merely a repository of records of human progress but more importantly it responds to human needs with the provision of right information to the right person at the right time. To facilitate this service, availability of highly qualified, competent and skillful library staff is very vital The exponential growth of information and its scattering, the complexities of publications and library operations, the necessity of retrieving the specific facts from large volumes of information demands the availability of technically qualified library personnel. The necessity of retrieving the specific facts from large volumes of information demands the availability of technically qualified library personnel. The necessity of more effective library staff and researchers interaction demands the appointment of academically well-qualified librarians. Library personnel should be provided with proper status for the proper execution of their duties. According to M.C. Garry· "if a person has to perform a particular role then he has to be given a certain status which will allow him the necessary freedom and authority to discharge his obligations...." As pressing is the issue of status, so important is the personality of library and information personnel. They should be approachable and interested to put the organised information to proper use. Library personnel should also have retentive memory and effective communication skills. In order to understand library communication, it helps to have some knowledge of general sematics "If individuals understand the effects of their communication habits, then they may be able to control them. Certainly every librarian...should be well versed in semantics. Reference librarians, especially, are constantly involved in communicating, and if they do not really understand the process, they cannot hope to be successful, or as helpful as ought to." Since the library receives users of different social backgrounds, temperaments and abilities, the library personnel should be able to get along with them and adapt to different situations. They should possess keen and analytical mind to decide appropriate actions to serve the users more adequately, conveniently and to have a proper rapport with them.

What is the role perception of a library personnel as viewed by non-practitioners of library profession? What types of qualifications and psycho-social traits are desired in a library personnel? A survey of a group

of library users making an active use of the library can provide an important input of information to furnish appropriate answers to the above-cited questions.

The Present Study

In the present study the desired professional/technical competence and psycho-social traits of an ideal librarian are projected as revealed by a survey of university teachers and postgraduate students. The results of the present investigation may be useful for library educators These results may provide feedback for members of Board of Studies in Library Science for curriculum development in the field of library and information science. They may be useful for library administrators for in-service training of their staff and serve as a guideline to inculcate desired qualities in staff, decide work allocation according to the expected qualities and qualifications of a job performance and presence of these qualities and qualifications in the existing staff The investigators tried their best to comb out the related literature but in vain By and large it can be said that no research work has been done in this area which is directly concerned with the present study.

Sample and Methodology

The population of the present study was the university teachers and postgraduate students of the University of Jammu Since it was physically impossible to carry out the present investigation involving the whole population, the ramdom sampling method was followed. Hence 50 university teachers (10 Professors, 17 Readers and 15 Lecturers) and 50 postgraduate students were randomly selected. An effort was also made to keep an equal number of individuals of both the sexes in the two groups

To prepare a questionnarie/measuring device for the collection of data was difficult task for the investigators. The librarian in a university is supposed to possess many traits/qualities to perform his day-to-day activities Thus the selection and identification of different traits for an efficient and ideal librarian posed a problem before the investigators. It was decided to have a review of the related literature as well as to consult the experts working in the discipline of library science and information On the basis of these two criteria the investigators selected 20 professional and 23 technical/psychological traits/qualities

Thus, a questionnaire comprising of two separate lists was designed The first list consisted of 20 attributes related to the professional competence and the second list consisted of 23 psycho-social traits of a librarian. These lists were distributed among the teachers and post-graduate students of the University of Jammu and each person was asked

to mark five attributes for professional competence and five psycho-social traits from the lists, in order of priority as perceived by them.

The data thus collected were analysed with the help of the following statistical techniques.

(a) Thurstone's Incomplete Rank Order
(b) The Critical Ratio.

Analysis of Data

Researchers calculated the scale values by applying Thurston's Incomplete Rank Order for the qualities/traits of a librarian for the two lists separately. The responses given by the teachers and students were tabulated and converted into frequency distributions. The frequency distributions were converted into proportion Matrix From the total of the columns tables were prepared, arranging the attributes/traits priority values in the ascending order. The proportional matrix was then converted into Z-matrix and the finally calculated scales values of the two lists of the two groups are given in Tables 1, 2, 3 and 4.

The values of the critical ratios of the university teachers group and the postgraduate students group regarding professional/teachnical competence as well as psycho-social traits were calculated to see the significant difference of the proportions All the calculated values of the critical ratios came to be insignificant between the university teachers and postgraduates students for professional/technical competence. In case of psycho-social traits all the values of the critical ratio came to be insignificant, except only one value of the critical ratio of "Adaptability".

Findings

Table 1 indicates that academic qualifications is the highest priority shown by the teachers for the professional/technical competence of a librarian, as its scale value stands at 1.04. It shows that university teachers perceive that we can have better academic librarians if they possess the best of higher academic qualifications Skill in cataloguing, ability to communicate, skill in bibliography and Ph. D. degree in library science are the other attributes preferred by the majority of the teachers in that order of priority. The researchers asked some of the teachers why they had provided more weightage to skill in cataloguing over Ph.D. in library science. Their reply was that the Jammu University library lacked a functional and up-to-date catalogue, and Ph.D. in Library Science may be an essential qualification for the library manager who is supposed to have some research bent of mind to solve various library problems. A typical library worker providing service to the client must possess other required qualities and qualifications in priority to Ph D. in library science. Moreover, Ph.D. in library science may be an essential qualification for the teachers

TABLE 1
University Teachers Group for Professional/Technical Competence

Technical Competence	h	p	c	m	o	s	r	ı	k	j
Scale Value	00	.04	.06	06	.06	09	10	13	15	20
Technical Competence	q	f	l	n	g	b	e	t	d	a
Scale Value	.23	.27	32	32	36	.36	47	53	.99	1 84

of library science. The next attributes in order of priority are the knowledge of using a computer and the skill in reprography.

Table 2 indicates that academic qualifications stand at the top of the scale and skill in reprography at the bottom. Just like their teachers, the postgraduate students attached more importance to the academic qualifications for becoming an ideal librarian. In order of priority, according to this group, after the academic qualifications came the skill in cataloguing whose scale value is .65 and the ability to communicate whose scale value is .54. The students assigned the least importance to reprographic knowledge and, according to some students, reprographic work could be handled by trained technicians, and librarians should try to develop qualities and qualifications which could facilitate the effective transfer of desired information to various users.

TABLE 2
Postgraduate Students Group for Professional/Technical Competence

Technical Competence	h	b	m	f	e	g	r	j	p	c
Scale Value	00	.00	.00	05	.05	.05	.08	.08	.11	.14
Technical Competence	s	i	o	k	n	l	q	t	d	a
Scale Value	17	17	.24	.34	.37	39	39	54	64	.71

The university teachers of various postgraduate teaching departments ranked intelligence at the top of all the psycho-social traits desired in a librarian. This group did not give any weightage to empathy as one of the psycho-social traits of a librarian. They gave second, third and fourth priority to memory, initiative and honesty, as the scale values for these are .71, .59 and .57 respectively. It can be safely concluded that university teachers attach more importance to such qualities as intelligence, memory, initiative and honesty of an ideal librarian.

TABLE 3
University Teachers Group for Psycho-social Traits

Psycho-social	q	d	n	w	j	r	h	s	t	g	o	i
Scale Value	00	05	.05	05	.06	.10	.10	.12	18	19	25	26
Psycho-social	p	v	k	m	b	e	u	l	f	c	a	
Scale Value	26	26	.29	31	35	37	39	57	59	.71	1.01	

The postgraduate students, as Table 4 indicates, expressed their choices of intelligence, honesty and memory as the psycho-social traits of a librarian. They assigned the lowest priority to such traits as empathy, objectivity and emotional maturity

TABLE 4
Postgraduat Students Group for Psycho-social Traits

Psycho-social	q	r	i	g	m	w	t	h	d	f	s	n
Scale Value	00	14	.21	21	.21	24	.24	.25	.29	.32	.32	.32
Psycho-social	j	b	p	o	e	v	u	k	c	l	a	
Scale Value	32	38	38	40	.43	.45	52	55	.72	90	1.04	

The perceptions of the university teachers and university students as regards the professional/technical competence of librarians were found similar in such areas as . Skill in Reprography; Ability to Communicate; Elementary Knowledge of Auditing and Accountancy; Knowledge of Information Analysis, Elementary Knowledge of Using Computers; Elementary Knowledge of Librametry and Bibliometrics; Knowledge of Social Role of the Library, whereas they had perceptive differences in respect of Skill in Bibliography, Ph.D. in Library Science, Knowledge of Research Methodology; Knowledge of Information Technology.

Differences between the teachers and the students with regard to the proportions of all psycho-social traits were insignificant, except in the case of Adaptability where the critical ratio value came to be 3.77 which is significant at .01 level of confidence. While the two groups had similar perceptions about such psycho-social traits as Empathy, Memory; Intelligence, Personality, Resourcefulness; Objectivity, Emotional Maturity; Reasoning Ability, and Creativity, they had differences as regards Honesty and Adjustment.

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Research Abstracts

Knowledge, Attitude and Beliefs of Secondary School Teachers and Students of Bundelkhand Region about Population Education

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INDIA's current population as per the Population Reference Bureau, is 835.035 million (CSR Sept. 1989, p. 53) and it is estimated that India will have a population of 1,042.5 million by the year 2000 and 1,374.5 million in 2020. Due to the fast growing population, India's progress has perhaps been adversely affected in industrial, agricultural, medical, technological, financial and educational areas

To face the aforesaid challenge, population should be controlled and to achieve this the ideal small family happy family norm and the concept of family welfare should be spread through population education. As students of secondary school stage belong to the fertility age group, they need right guidance in this direction for sustained population control. After family, school is the only proper place where students can get suitable guidance from teachers.

For developing awareness among students about the population problem, population education as a new discipline has been introduced at the school level. Population education is an important teaching-learning

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Thesis submitted to Dr Harisingh Gour Vishvavidyalaya, Sagar (1989).

process through which students can be made aware about the rapid population growth and its negative effect on their family life. It can also help to form a healthy attitude among students towards their better life.

Objectives

1. To study the knowledge level of teachers and students of secondary level regarding population of India
2. To study their attitudes towards population education.
3. To study their social, religious and economic beliefs about population education.

Hypotheses

1. There is no difference between teachers and students of different categories in respect of their knowledge about population.
2. There is no difference in their attitude towards population education.
3. There is no difference in their beliefs about population.

Methodology

The present study was largely based on the normative survey method. This descriptive survey was limited to the selected samples of teachers and students. The sampled teachers and students were contacted through questionnaires and their knowledge, attitudes and beliefs were identified, analysed and interpreted. Wherever necessary, a comparative study was also made.

Sample and Population

1. Nine hundred and ninety-nine secondary school teachers and 1000 students were selected as the population of this study
2. The sample of teachers was drawn from the secondary schools of Bundelkhand region of Madhya Pradesh along with students of tenth and eleventh classes taken from the same region. Besides this, 251 teachers and 263 students were also taken from the tribal area, i.e. Bastar region of Madhya Pradesh
3. In order to draw an adequate and representative sample and to keep it free from bias, the technique of random sampling was used. Out of 225 institutions, 24 schools from urban and 30 from rural areas for students and 50 institutions from urban and 61 from rural areas for teachers were selected by lottery system.

TOOL USED

A self-constructed questionnaire was developed as a research tool by the researcher.

MAJOR FINDINGS

Some of the important findings are as given below:

1. Both the teachers and the students favoured a suitable higher age for marriage of girls and boys.
2. They reported awareness of the population growth, its related problems and the need for control of population through Population Education.
3. They expressed their choice in favour of two children as an ideal number for every financial group.
4. They preferred teaching of population education at school level particularly at primary and secondary stage by integrating it either with different school subjects or with some specific subject. But at college level, they wished it to be taught/studied as an independent subject.
5. They favoured the use of Nirodh as a suitable means for population control. Similarly, nasbandi/sterilisation as a popular method for family planning.
6. The majority of teachers were in favour of organising population education programmes at different school stages under the Adult Education programme.
7. As against the teachers, the students expressed a favourable attitude towards a training programme of population education, if organised.
8. The majority of teachers showed favourable attitude towards the integration of knowledge of population edcuation in their teaching subjects.
9. Both the teachers and the students considered Population Education as the only right approach to solve population problem.
10. They did not agree with the idea that there would be a fall in the moral standards of the students due to the teaching of Population Education.
11. Both the teachers and students possessed positive attitude/beliefs as regards religious, social and economic aspects of Population Education.

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Factors Associated with High and Low Work Motivation of Teachers

JAI PRAKASH MITTAL

TEACHERS play an important role in bringing about social transformation leading to national reconstruction. The quality of teachers and their inputs, therefore, become of paramount importance in the whole process of teaching-learning. Besides, all factors generally talked about influencing teachers' performance and their motivation to work seem to be in the root of the behaviours displayed by teachers. Industrial psychologists and organisational researchers have suggested that performance is the function of the ability and motivation of the workers and hence job performance needs to be critically examined and strategies developed to check the deteriorating standards of performance in various fields of activity. Education is also no exception to it.

The present study was an attempt to explore the levels of teachers', motivation to work and some of the important factors associated with their high and low work motivation viz. job satisfaction, personality factors, school organisational climate and pupil likings.

OBJECTIVES

1. To explore and ascertain the level of motivation to work of secondary school teachers in Delhi and to identify teachers possessing high and low work motivation.
2. To compare the work motivation level of teachers with regard to their background variables such as sex, age, experience, qualifications, status and income.
3. To establish relationship between teachers', motivation to work

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Thesis submitted to Meerut University (1991)

and their background variables such as sex, age, experience qualification, status and income

4. To examine the difference in the motivation level of teachers placed in schools varying in location, management, type and size.
5. To study the relationship between teachers' motivation to work and school variables, namely location, management, type and size.
6. To compare high and low work motivated teachers with regard to their personality characteristics, job satisfaction and organisational climate of the schools.
7. To determine the relationship of teachers' personality characteristics, their satisfaction and organisational climate of the school with the phenomenon of high and low work motivation
8. To compare pupils' liking of high and low work motivated teachers and study the association of this liking with teachers' motivation to work.
9. To draw some significant conclusions regarding factors affecting work motivation of teachers.

HYPOTHESES

1. Teachers will be found to vary in their level of work motivation
2. Teachers' variables such as sex, age, qualifications, experience of teaching, status and family income may have differential effect on work motivation of teachers.
3. There will be significant relationship between teachers' motivation to work and their background variables such as sex, age, experience of teaching, qualifications, status and family income.
4. Teachers working in schools with varying location, management, type and size will differ significantly with each other in their motivation to work.
5. School variables such as location, management, type and size will be found to have significant influence on work motivation of teachers placed there in
6. High and low work motivated teachers will differ significantly with regard to their personality characteristics as indicated by the four second order personality factors.
7. Teachers with high work motivation will possess higher level of job satisfaction as against their counterparts with low work motivation
8. High and low work motivation of teachers will differ significantly in respect of their perception of the organisational climate of the school
9. Significant relationship will be found between high and low levels of work motivation and teachers personality characteristics, job

satisfaction and their perceptions about organisational climate of the school

10 Highly work motivated teachers may be liked more by their pupils as compared to their counterparts possessing low work motivation

11. There will be significant relationship between pupils' liking and their teachers', motivation to work.

Methodology

The study was conducted through the normative testing survey method and following the cross-sectional approach. The sample consisted of 400 teachers (TGTs/PGTs) selected randomly from 20 senior secondary schools of the Union Territory of Delhi A two-stage stratified proportionate random sampling frame was adopted to give due consideration to the location of the schools (urban/rural) and the management of the schools (Government, private aided and private unaided)

Two groups of 20 teachers each were identified on the basis of the Teachers' Motivation to Work scores to study the factors associated with high and low work motivation of teachers. Pupil liking of 600 pupils were examined in respect of these two groups of teachers

Tools Used

The following instruments were used for the present study.

Personal Information Bank, School Information Bank, Teacher Motivation to Work-Test and Scale by B. Singh, Cattel's Sixteen Personality Factors Questionnaire (Then 16 PF) adapted by S.D Kapoor, Teachers' Job Satisfaction Scale by S.P.Gupta and J.P Srivastava, School Organisation Climate Discription Questionnaire by Motilal Sharma, and Students' Liking Scale by S.P.Malhotra and B.K. Passi

Statistical Techiniques Used

Data analysis were conducted through computers. The various statistical techniques employed were:

Parson's Product Moment Correlation, Point Biserial Correlation, Multiple Correlation and Multiple Regression Analysis

Major Findings

1. Most of the teachers were found to possess average or above average levels of motivation to work

2 They were found to possess different levels of motivation to work vis-a-vis their personal background and their placement in various types of schools.
3. Female teachers, teachers younger in age and teachers possessing teaching experience of up to ten years displayed higher levels of motivation to work.
4. Teachers' status (designation), qualifications and family income did not yield differential influence on their motivation to work.
5. Their sex, age, teaching experience were found to be significantly related with their motivation to work, but their status (designation), qualifications and family income were found to be independent of their motivation to work.
6. Teachers working in urban schools, private unaided schools, girls'/ coeducational schools displayed higher levels of motivation to work than their counterparts working in rural, private aided or Government managed and boys' schools.
7. The size of a school did not yield differential influence on teachers' motivation to work.
8. Among school variables the location and type of a school were found to be significantly related with the phenomenon of teachers' motivation to work. The size and management of a school had almost no relationship with teachers' motivation to work.
9. High and low work motivated teachers differed significantly on the four second order personality factors viz. (i) Low vs High Anxiety, (ii) Introversion vs Extraversion, (iii) Tenderminded Emotionality vs Alert Poise, and (iv) Subduedness vs Independence.
10. Most of the high work motivated teachers were noticed to possess low anxiety (better adjustment), extroversion (uninhibited personality), tenderminded emotionality (sensitiveness to the subtleties of life, gentleness), and independence (daring).
11. Most of the low work motivated teachers were found to be anxiety ridden (maladjusted), introvert (inhibited in interpersonal contracts), alert poise (missing the subtle relationships of life/acting with insufficient consideration and thought and having subduedness (group dependence or passive personality).
12. Significant relationships between teachers' motivation to work and four second order personality factors were observed While Factor I (Low vs High Anxiety) and Factor III (Tenderminded Emotionality vs Alert Poise) were found to be negatively associated, Factor II (Interoversion Vs Extroversion) and Factor IV (Subduedness vs Independence) showed positive relationship with the teachers' motivation to work.

13. High work motivated teachers were found to have more job satisfaction than low work motivated teachers.
14. Job satisfaction of teachers was found to exhibit significantly positive association with teachers' motivation to work.
15. In school organisational climate high work motivated teachers perceived less disengagement, less alienation and more esprit than low work motivated teachers
16. High work motivated teachers, in general perceived their school organisational climate as open or autonomous as agaisnt low work motivated teachers who perceived it as more closed or paternal.
17. Disengagement, alienation and esprit dimensions of school organisational climate appeared to be significantly related to the teachers' motivation to work.
18. High work motivated teachers were liked more by their pupils than low work motivated teachers.
19. Pupils' liking were found to demonstrate significantly positive relationship with teachers' motivation to work.
20. The set of 13 predictor variables, viz. job satisfaction, four second order personality factors and eight dimensions of school organisational climate yielded a multiple correlation coefficient of the order of 9055 and accounted for about 82 per cent of variance in the criterion variable of teachers' motivation to work
21. Considering 13 variable predictors it was found that job satisfaction appeared to be the most important predictor with a contribution of 31.05 per cent of variance in the criterion measure. But the second order personality factors together accounted for 34.12 per cent of variance in the predicted variable. Individual ranged from 3.66 to 14 89 per cent. The two dimensions of organisational climate namely disengagement and psycho-physical hindrance owned responsibilities to the tune of 10.68 and 3.53 per cent respectively.
22 When examined for direct and indirect contributions of the variables, job satisfaction ranked first in its direct contribution while in case of variables pertaining to personality and school organisational climate their indirect contributions exceeded direct contributions highlighting their complex nature and interrelationship with other variables.
23 It seemed proper to infer that not only high and low levels of teachers' motivation to work can generate pupils' liking or disliking but also pupils' liking may determine levels of teachers' motivation to work to a great extent.
24 The addition, students' liking as a predictor variable in the above battery of 13 variables increased the multiple correlation coefficient to .9151 and the total level of prediction by about two per cent. The

modified battery with 14 predictors appeared to account for 83.74 per cent variance in the criterion, i.e., teachers' motivation to work.

25. Personality characteristics of teachers and their perceived dimensions of school organisational climate seemed to maintain their predictive efficiency even after inclusion of pupils' liking as an additional predictor variable. Job satisfaction, however, appeared to show seven per cent less contribution towards the prediction of teachers' motivation to work, while the additional variable of pupils' likings accounts for 8.49 per cent of variance in the criterion. The variable of pupils' likings behaved similar to the personality variables and the variables pertaining to school organisational climate, so far as its indirect and direct contribution towards variance in the criterion measure was concerned.
26. Teachers' motivation to work could be predicted successfully on the basis of their personality characteristics, job satisfaction, pupils' liking and some dimensions of school organisational climate such as disengagement, psycho-physical handrance, etc.

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Vocational Interests, Adjustment Problems and Scholastic Achievement of High and Low Creative Students

MOHAMMAD IQBAL MATTOO

OF all the abilities that man is endowed with, creativity is considered the most unique and highly valued ability It is this ability which influences every human activity in almost all spheres of life. For the survival of any nation proper nurturing of this potential is essential. Tonybee (1964) has rightly remarked ". . to give a fair chance to potential, creativity is a matter of life and death for any society."

Researchers in India and abroad have significantly contributed to the understanding of creativity. Anderson, 1959; Mednick, 1962; Raychaudry, 1966; Passi, 1972; Sandu, 1974; Gakhar, 1975; Paramesh, 1976, Mehdi, 1977, Resool, 1977, Jha, 1978; Tripathi, 1979; Asha, 1980; Singh, 1980; Sinha and Sharma, 1980; Singh, 1981; Gupta, 1983; Saxena, 1984; Vasesi, 1985; Kour, 1987 and Pathak, 1989 have studied creativity in relation to psycho-social variables, viz. cognitive, affective and demographic. Inspite of all this work much remains to be done in this area.

It is against this background that the investigator undertook this study.

1. To identify high and low creative students.
2. To compare high and low creative students on their vocational interests.
3. To compare high and low creative students on their level of adjustment.
4. To compare high and low creative students on their scholastic achievements.
5. To find out the sex variation on vocational interests, adjustment problems and scholastic achievement in case of high creative students.

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* Thesis submitted to Kashmir University (1992)

6. To find out the dominant factors of interest and adjustment of high and low creative students.

HYPOTHESES

1. High and low creative students differ significantly in their vocational interests.
2. High and low creative students differ significantly in their adjustment problems.
3. High and low creative students differ significantly in their scholastic achievement.
4. There is no sex variation in the vocational interests of high creative group of subjects.
5. There is no sex variation in the adjustment problems of high creative group of subjects.
6. There is no sex variation in the scholastic achievement of high creative group of subjects.
7. The dominant factors of high and low creative students, on vocational interests and adjustment, bear no significant similarity.

RESEARCH DESIGN

Sample

One thousand students (boys and girls) studying in 10th grade, drawn randomly from high and higher secondary schools of Anantnag district of Kashmir, served as a sample for the present study. The students were in the age group of 16-17 years.

Tools

1. Baqir Mahdi's Verbal Test of Creative Thinking (1973)
2. Chatterji's Non-Language Preference Record (1966).
3. Jameel, A. Qadri's Adjustment Inventory (1964).
4. The scholastic achievement of each of the high and low creative students was assessed in terms of the aggregate marks he/she obtained in his/her previous two annual examinations.

Identification of High and Low Creative Students

The students whose scores were on and above the third quartile on Baqir Mehdi's Verbal Test of Creative Thinking were considered as high creatives and those whose scores were on and below the first quartile were labelled as low creatives.

Analysis of Data

The data were subjected to suitable statistical treatment by using 't' test and factor analysis A sub-group analysis was also carried out to see the sex variation in the creative group. Lastly, for the isolation of dominant factors of interest and adjustment, Thurstone's Centriod Method of Factor Analysis was used.

Major Findings

1. High and Low creative students differed significantly in the interest areas, viz. fine arts, literary, scientific, technical and household; the mean differences favouring the high creative group. On the other hand, low creative student in comparison to high creative students were found to possess significant differences in the interest areas of medicine, agriculture, crafts, and sport; the mean difference favouring the low creative group.
2. High and low creative groups did not differ significantly in the outdoor interest area which implies that both the groups possessed outdoor interest to an equal extent.
3. High creative group in comparison to low creative group was found to be socially mal-adjusted, emotionally unstable and not satisfied with the household affairs However, in case of health adjustment, as an independent area, no significant difference was found between high and low creatives.
4. High creative group was found academically bright as compared to low creative group.
5. High creative boys and girls were found to be significantly different in five interest, viz. fine arts, medical, outdoor, agriculture and sports. The mean differences in the first three areas favoured high creative boys and in the remaining two areas high creative girls were favoured. However, in case of literary, scientific, technical, crafts and household interests the differences in the means failed to arrive at any level of significance.
6. Sex variation in the highly creative group with regard to social, emotional, home and financial adjustment could not be established. However, in the area of health adjustment, significant differences were found between the two groups.
7. No significant difference was found in the scholastic achievement of high creative boys and high creative girls. This implies that sex has no role to play in determining the achievement status of creative subjects.
8. Dominant vocational interests and adjustment areas for the high creative group were found to be different in comparison to low creative.

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Spontaneous Art of High and Low Achievers

MADHU MATHUR

ART is a language universal in nature; imbibed naturally without any orientation in its formal grammar. Every child knows it and use it. The adult gropes for the meaning. Like the alphabet, words phrases and structures of any language, art too (and we mean drawing and painting) has themes, colour lines, strokes and rendering techniques each endowed with meaning.

Scholars, art enthusiasts and psychologists have studied this universal language of art in their own diverse ways, some studying a matter of skill, others concentrating upon revealing mysteries of art and art compositions as reflecting the artists' personality and endowments.

In these times of cutthroat competitions in academic and professional fields we put a high demand for excellence which can be managed if proper guidance is given to individuals at an early age

Areas that may be considered in identifying a prospective high achiever may be his capacity to achieve his potentiality, his personality, his social and economic background, his interest, and the like. For all these we require reliable tools and psychological tests, which require a high degree of technical training in administering and interpreting them. A natural question that arises is. Can we have a simple, usable and reliable tool to locate potential for academic achievement? The present study was designed specifically to meet the demand for such a tool, and it was proposed to be based on spontaneous art, for, Art (herein limited only to drawing) is a universal language used consciously or unconsciously by the child, the adult, the man, the woman the village or city deweller, the literate and the illiterate alike.

Thesis submitted to Banasthali Vidhyapith (1992)

OBJECTIVES

1 To locate specific art patterns associated with high and low achievers.
2. To find out the difference in characteristics of spontaneous drawing of boys and girls with respect to:
   (a) their level of achievement
   (b) sex
   (c) area of academic study, and
   (d) social background
3. To locate the characteristic features of spontaneous drawings of high and low achieving school-going boys and girls.
4. To develop a tool for evaluating spontaneous drawing (including a suitable scoring blank and marking scheme).

SAMPLE

1 Students who were in the age group 15 to 16 years.
2. Three hundred and sixty boys and girls picked from the merit list declared by the Board of Secondary Examination, 1987.
3 The first 30 in each subject area were included among the high achievers, while the failures and lowest achievers comprised the low achievers group.

TOOLS

1 Personal data record blank
2. Analysis blank for scoring spontaneous drawing involving
   (a) Theme of drawing like human, animal, marine animal, bird figure, natural objects, man-made and utility objects, designs, diagrams, etc.
   (b) Proportions
   (c) Dimension effect
   (d) Rendering technique
   (e) Use of provided space
   (f) Strokes like smooth, heavy, light, continuous, broken connected, aesthetic, etc.
   (g) Verbalisations, if any.

ART-MATERIAL

1. *Paper:* A white paper of 6" x 6" of moderately rough texture was considered suitable for drawing
2. *Pencil:* An HB pencil of standard hardness was used for drawing so that it could show the nature of strokes like heavy, light, etc.

Method/Procedure of Getting the Drawings

For collecting spontaneous drawing the following procedure was adopted:

1. The subjects were provided with drawing material, namely ten drawing sheets (controlled size 6" x6" and HB lead pencils, and rubbers were provided only if somebody wanted these
2. The subjects were given no help or directions whatever regarding theme or technique, which otherwise would have put some limitations and restrictions on the products.
3. They were given only one instruction, that is, they were to draw whatever they liked to, using the material provided to them.
4. They were left free to use the drawing sheets covering them at their will with drawings.

Thus, spontaneous drawings used in this study were the final products collected from the subjects, drawn by black pencil on the surface of the drawing paper (white) without any restrictions, regulations, guidance help and assistance.

Analysis

After collecting ten spontaneous drawings from the children the whole analytic procedure which was to follow was based on a sound scientific approach.

Scoring Scheme

Each of the ten drawings prepared by individuals was scored by placing dots in the respective place assigned to it

When all the drawings were thus scored, the scores were summed up for observed categories, representing the final scores of a particular subject.

These scores were transferred on another master sheet which represented the total scores of the 30 individuals under each category, thus representing the total category-wise scores standing for the observed characteristics shown by the members of a particular group.

Care was taken to take notes in respect of individuals and groups whenever something not covered by the scoring blank appeared, or when something striking appeared which could go to form a distinct trait, or even when the various themes as descriptions were to be specially noted. These timely notes were used in the qualitative analysis.

The data were also analysed qualitatively to make the quantitative results more illustrative and understandable

MAJOR FINDINGS

1 Spontaneous drawings can be used to identify high and low achievers.
2 There do exist specific drawing characteristics in the work of boys and girls which distinguish them as such
3 Areas of study to influence the art of boys and girls (as suggested by the typical art behaviour of science, art and commerce groups).
4 Components of spontaneous art seem to have an understandable relationship with sex, and the group to which the artist belongs.
5 Spontaneous drawings of high achievers are characterised by natural scenes and isolated flowers, diagrams, human figures with associated movement, stray birds, acceptable proportions, central placement, use of almost all provided space, efforts at achieving 3 D, heavy strokes generally smoothed out.
6. Characteristic features reflected in the drawing of science students are, preference for human drawing in social context, humorous figures, cartoons, associated movement diagrams, social scenery, efforts at composing, central placement, heavy lines, correction of lines and smoothening of strokes, traces of aesthetics in strokes, and composition.
7. Characteristic features of the drawing made by arts students are portraiture, isolated birds with decorative tendencies, flowers with decoration and shadings, traditional natural scenery, central placement of figures, excessive use of shading for delineation of parts and decoration, heavy and continuous strokes.
8 Characteristics of the drawing made by commerce students are: frequent use of diagrams, designs, undesignated human and bird figures, utility orientedness shown in the drawing of utility objects, traditionally learnt natural scenes, diagrams, lack of organisation, aesthetics and composition, use of shading, excessive use of heavy lines.
9. Effect of social background is perceptible in themes like antenna on roof tops, game of cricket, enjoying video games, visit to a zoo, inter planetary travel, dance club, etc. as depicted by boys of city environment and higher social status family background. Their female counterparts, however, prepared extolling role of women in society, bride burning and sati dowry demands, flight in an aeroplane, etc.
10. High achievers from town atmosphere and middle class families preferred to draw portraits of lawyers, doctors, engineers, market scenes, fairs, mountaineering, etc. Their female counterparts,

however, drew portraits of teachers, examination hall, printing of textile articles, picnics, etc.

11. Natural scenes do not seem to show any marked deviation in themes but only in a few cases wherein town dwellers showed themselves to be more traditional in learnt figures of mountains, huts, rivers and flocks of birds.

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Nutritional Status and its Effect on Physical Development and Educational Achievement

ANJALI PATTANAIK

CHILDREN are the citizens of tommorrow who would substantially and significantly contribute towards the socio-economic development of a nation, and hence their physical and mental health become important issues. Hunger and malnutrition are the most serious problems in a developing country like India Children are like barometers, which reflect the nutritional status of the community. Studies have shown that a major percentage of children do not get adequate calories. So calorie deficiency is a major problem. Even though socio-cultural factors are believed to have significant influence in dietary practices/food habits and quality and quantity of calorie intake in particular, no extensive studies have yet been undertaken in this field. Hence the present study.

OBJECTIVES

1. To ascertain the nutritional status of children.
2. To find out the factors responsible for nutritional deprivation.
3. To see the effects of nutritional status on physical development.
4. To find out the effects of malnutrition on educational achievement
5. To assess the environmental factors responsible for the physical development of children
6. To find out the causes of poor educational performance of students
7. To suggest measures for the amelioration of this situation and improvement of the health as well as education of children

However, the scope of the research was confined to ascertaining the

* Thesis submitted to Utkal University (1990).

nutritional status of the children particularly living in a poor state like Orissa and to find out the extent to which their physical development and educational achievement were affected, in the backdrop of their different places of residence (urban, rural and slum) and various other variables pertaining to their home and parental conditions.

SAMPLE

Essentially exploratory in nature, the present study involved 336 school-going children in three different settings· urban, rural and slum. To find out their developmental status and educational achievement, four groups of children from each area, in the age-range of 6, 7, 8 and 9 years, and from both the sexes, were selected.

TOOLS USED

1. Anthropometric indices
2. Questionnaire to ascertain physical development
3. Interview schedule for collection of information regarding the nutritional intake and family background of the children
4. Teacher evaluating inventory and academic achievement records

MAJOR FINDINGS

1. The nutritional status of the children was found to be significantly influenced by environmental factors. This was true for children living in urban, rural and slum areas, for the entire developmental sequence, at least 6 to 9 years of age, and equally well for both boys and girls.
2. The physical development of the children was also found to be affected significantly by their nutritional intake and environmental conditions, irrespective of their place of living, age and sex However, physical space at home, particularly for urban children, was found not to be affecting their physical development, while it was true for rural and slum children.
3. The educational achievement of the children in general was also found to be very strongly influenced by their nutritional intake, parental and home environmental conditions.
4. The relationship between physical development and educational achievement was found to be significant and effective. When the boys and girls of three different areas and across four different age-groups were compared, the analysis revealed that the better the state of physical health, the better was educational achievement in schools
5. In order to compare the groups across age and area dimensions

and to establish the nature of relationship, ANOVA was done for five important variables. For calorie intake, the differences between the sub-groups corresponding to their age were found to be highly significant and for other four variables the differences were non-significant. Thus it was found that the children belonging to four different age-groups were very well comparable, but there was little or no difference in respect of four major background variables, viz. parents' education, family income, number of children, and number of members in the family.

Making a comparison across area of living (urban, rural and slum), inter-group differences were found to be very largely significant for all the five variables mentioned above. Hence, the four different age-groups of children were different from each other in any particular area, from the other two. In other words, the children of three areas greatly varied both in calorie intake and for their background variables. However, within the groups differences were marginal and non-significant in most cases.

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Book Reviews

Education for Development in Asia

JANDHYALA B.G. TILAK

Sage Publications, New Delhi, 1994, Rs 275.00

THE human capital revolution of 1960s inspired the policy makers and the researchers alike to take more and more interest in the educational development of the respective countries because education was considered as a major agent for economic investment in education and their comparison with the rates of return to investment in physical capital further strengthened the belief that education can act as an important stimulant for economic growth. Most of these studies referred mainly to the experiences of the developed countries of the West. Studies relating to the countries of the Third World of Africa and Asia which are fewer in number also tended to support such generalisation about the importance of education in economic development. In the same way, the studies aiming at presenting a global view about the role of education in the group of countries belonging to different continents seemed to emphasise the same conclusion. The present study by Jandhyala B.G.Tilak attempts a similar analysis of the linkages between education and development in the context of the Asian continent.

The study is divided into five parts with 11 chapters. Part 5 presents statistical data about educational development of different Asian countries. Part I consisting of two chapters presents a background of development profile of the countries in Asian continent. Part 2 consisting of two chapters presents a brief outline of educational development and investment in education in the Asian countries. Part III which is a more substantive part of the entire study consisting of six chapters presents an analysis of linkages between education and economic returns, education and agriculture productivity, education and poverty, unemployment, and income distribution, education and political development. Part 4 presents a summary and major conclusions of the study in chapter 11 and also a brief outline of the areas for future research.

The reader feels satisfied that the study is fairly well structured and it contains useful information about education and different aspects of development of the Asian countries.

While one must appreciate the choice of a topical theme for the study the reader feels that the study has a bias towards the economic returns to education rather than considering education as an agent for social change. There is a brief discussion of education and demographic changes and political development. This is understandable because the author himself is an economist of education. When we consider the importance of education in the countries of the Third World belonging to an upcoming continent like Asia or Africa we have to recognise the role of education as an instrument of social change and not just economic change. The social, economic and political forces behind the development of education and the socio-economic and political implications of such a development needs to be judiciously considered in any such study of the importance of education.

The detailed bibliography which the study presents at the end misses some of the important readings such as *Studies in Educational Reforms in India* brought out by Indian Institute of Education, Pune which had the major focus on the role of education as a change agent. The five volumes under this series contained as many as more than 30 notable studies, none of which find a mention in this important study relating to the same theme.

At times the study under review appears to overlook the process of linkage between society and education, on the one hand and education and multi-faceted development of the individual on the other. The micro perspectives which deserve consideration in any analysis of such linkages would get lost in national or continental perspectives which is the focus of the present study. The study also seems to consider only the end results of education and development. This should not give an impression to the reader that the study is a less serious exercise in analysing the linkages.

The above observations are made only to highlight the dimensions which deserve to be kept in mind. One may have reservations about the methodology of establishing the relationship between education and development (in terms of rates of return analysis or regression analysis). All the same the study presents a useful, systematic and analytical compendium of the information about education and development in Asian countries. In conclusion we wish to compliment Dr. Tilak for such an overview of Education Development Nexus in the Asian countries.

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Innovations in Higher Education

Singapore at the Competitive Edge

V. SELVARATNAM

World Bank Technical Paper No. 222
Asia Technical Department Series, 1994, pp 115

THE opening of economy to the world market has caused cahnges in the education system of the countries like Korea in early 70's and Singapore in late 80's. India has opened up its economy to the world market in early 90's. The impact of it on the education system has yet to be seen The policy framed in 1986 has been, by and large, reiterated in 1992. Possible changes as a response to making economy competitive have yet to be introduced

In Singapore one of the implications of the opening of the economy to the world market and reorienting it from import substitution to export orientation has been to strengthen the higher education system by diversifying it and making it more merit- and quality-oriented. The prime objective of reform was "to make the tertiary institutions an effective economic catalyst through excellence and to link their output to the continuously changing needs of the labour market, in particular, the vital manufacturing and service sectors of the nation which needed to innovate and create the maximum value added to its products to sustain and enhance their competitiveness in the global economy. Public expenditure was used to fuel the expansion of the system and to achieve excellence through continuous quality upgrading."

As a response an attempt was made to replace "erstwhile colonial highly structured by well-structured multi-functional and stratified demand-driven and robust system". It created a three-tier higher education system with a concept of elite and the broader base of an educated and skilled workforce so as to enable the economy to perform · the first tier of the university system along with the open university for high-level manpower needs including professional requirements; the second tier of quality technical institutions for middle-level job/career-oriented training institutes; and the third tier of institutions for providing training, policies and skills for existing workers. Keeping in view the vision for future development of the country Singapore allocated four to five per cent of GDP for education and it planned to raise it to six per cent of GDP. Nearly ten per cent of the total students are getting benefit of tertiary education. The future plan is that by 2000 AD nearly 60 per cent of Singapore's successful secondary school leavers will be able to benefit from tertiary education.

All this has been achieved and planned to be achieved through the positive intervention of the government. A kind of negotiation took place between the autonomous university system and the Government. It is stated

that "Government's strong interventionalist policy complemented by an effective implementation strategy has positively helped the higher education system move away from the traditional British concept of narrow higher education to well-structured multifunctional and stratified demand driven system so as to meet the need of manpower" of rapidly changing market economy It is also pointed out that government maintains strong control over their policy direction. The positive interventionist policies causing conflict between the university autonomy and the government approach was probably solved through managerial approach.

The technical paper by Ratnam deals with such aspects as Human Resource Development after Independence, Structure of Development of Higher Education, Overseas Education Relevance and Quality, Research and the University-Industry Nexus, Government Institutions Relations, Finances and the Future of Higher Education in Singapore along with the implications of the Singapore experience for developing nations

The report vividly brings out innovations in higher education caused through the positive interventionalist and managerial approach of the Government. It highlights effective implementation strategies which helped the Singapore tertiary education economy to respond to the higher level manpower and research support system with a provision for linkage with the industry, on the one hand, and the supply of middle level skilled workforce and upgrading the technical skills of existing workers in Singapore economy, on the other

The report recommends that there should be (i) linkage between education and labour market, (ii) prioritized development-oriented research strategy supported by an excellent infrastructure, (iii) merit-based admission, (iv) rewards for excellence, (v) cost-effectiveness along with a policy of diversification of resources.

The report also highlights the limitations of the state interventionist approach to respond to the fast-changing technology and changing demands of the market economy, restricting streams of admissions by direction rather than individual choices, equity with regard to women's education

These issues are likely to be faced by any developing country which would try to re-structure the education system so as to make it responsive to fast-changing technologies and market demands. Therefore, these aspects should be planned carefully The paper has been very well brought out. It needs to be read by all those interested in reforms in higher education

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Achievement Perfotmance at the Primary Level in Public and Private Schools of Tamil Nadu

Styles of Education-Development Interface in North-Eastern Tribal Region

Importance of Need Fulfilment in Improving Quality of Working Life Perception

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In addition, the purpose of this journal is to provide a medium for dissemination of educational research and exchange of experiences among research workers, scholars, teacher educators, teachers and others interested in educational research and related fields and professions.

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We intend to start a column in the forthcoming issues of our journal to encourage debate, discussion, presentation of opinions on the various issues concerning educational research and innovations. Readers are also welcome to express their views regarding the research papers and notes published in this journal. Rejoinders from the authors about the reactions towards their papers would also find a place in the proposed column.

— Editors

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Research Papers

Achievement Performance at the Primary Level in Public and Private Schools of Tamil Nadu : A Preliminary Analysis Using Ordinary Least Squares

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ABSTRACT

This paper presents some of the results of a recent study of public, private aided and private unaided schools of Tamil Nadu, which investigated whether the greater managerial discretion associated with the private sector leads to higher academic performance It focuses on the derivation and estimation of achievement models using Ordinary Least Squares, which was the first stage in undertaking the subsequent analysis using Hierarchical Linear Models

Achievement scores in mathematics and reading comprehension of Class IV pupils were regressed on student-level and school-level predictors as well as dummy variables for the private aided and unaided sectors. After controlling for school variables and pupil background variables, private unaided schools performed worse than public schools, while private aided schools performed better than public schools School management and school composition variables were important determinants of achievement. Furthermore, there were significant differences in the structural parameters of the achievement models for rural and urban areas, respectively

UNTIL the beginning of the last decade, private schools in India were regarded as the sound core in a dual system which was surrounded by a "penumbra

of institutions of medium or poor (or even very poor) quality .. mostly in the public sector and largely utilised by the common people" (Naik, 1979) These perceptions about the relative standing of private institutions have begun to change. Several authors have noted the mushrooming of English-medium schools of a different type which are no longer confined to metropolitan cities, and which serve pupils from poor and lower middle class families, including manual workers employed in the organised and unorganised sectors (J. Kurrien, 1983; Hariharan, 1988; Chadha and Singh, 1988; Nair, 1983) The consensus among education experts is that these private schools are "educationally substandard" (J Kurrien, 1983), but the popular perception is that pupils will have a "competitive edge" for higher education and entry into the organised sector job-market Popular perceptions are often based on gross outcomes (such as raw scores on examinations) which are largely a function of the incoming student characteristics (James, 1991); moreover, they are usually based on outcomes at the secondary level when the results of public examinations become available — ignoring outcomes at the primary stage which serves the largest number of pupils; and where the foundation for higher learning capability is laid

Research on the comparative performance of public and private schools in developing countries is a relatively new development. In India, such research has been extremely limited A small body of research in a few other developing countries has indicated that private schools may be more cost-effective than public schools, which has led some researchers to argue for the expansion of private unaided schools {Psacharapoulos (1987) for Tanzania and Colombia, Jimenez, Lockheed and Wattanawaha (1988) for Thailand; Jimenez and Cox (1989) for Tanzania and Colombia, Jimenez *et al.* (1991b) for the Dominican Republic} However, these studies had been conducted at the secondary level. In the Indian context, the relative performance of the public and private sectors at the primary level is important because a large proportion of pupils discontinue education after four or five years of school

Among Indian states, the state of Tamil Nadu is known for its remarkable achievements in ensuring a near universal enrolment at the primary level, despite high levels of rural and urban poverty (MIDS, 1988). Most of the enormous increase in enrolment has been accommodated in the public sector. Relatively high levels of public expenditure have financed the quantitative expansion of the formal school system, even to remote rural areas and a massive programme of incentives, including the mid-day noon meal for school children and the supply of free textbooks, uniforms and footwear

However, over a decade ago, the State government had adopted a policy of encouraging private unaided schools which were completely self-financing

This was viewed as a means of mobilising additional resources from the private sector to finance educational expansion. The State already had a sizeable private aided sector which accounted for about a quarter of the enrolment at the primary level (Classes I-V) During the eighties, the private unaided sector grew very rapidly and began catering to families from relatively low income groups Its share in enrolment, according to official figures, is still only about 4% at the primary level, but its actual contribution is likely to be much larger due to the presence of a large number of unrecognised primary schools and unrecognised primary sections of the unaided secondary schools [1] The State government's continuing emphasis on this sector is reflected in its recent policy announcement that permission to open private schools would be granted only on the specific undertaking that managements would not subsequently seek any government aid (GOTN, Department of Education, *Policy Note on Education,* 1993).

These developments have been accompanied by apprehensions, voiced in the press and amongst educationists, about deteriorating quality in both the public and private sectors and conflicting opinions about the superiority of either sector. Empirical data on which to base these judgements are hard to obtain, especially since data on the learning outcomes of pupils are not routinely collected.

In a recent study on the relative cost-effectiveness of the public, private aided and unaided schools in Tamil Nadu, data on the achievement levels of a large sample of pupils were collected.[2] Cognitive achievement in mathematics and reading comprehension of Class IV children were the outcomes of interest The study analysed the comparative effectiveness of the three sectors using Hierarchical Linear Models (HLM). The advantages of using the HLM in the study of school effects have been well documented in the literature (Aitkin and Longford, 1986; Goldstein, 1987; Raudenbush, 1988; Bryk and Raudenbush, 1992). The HLM analysis enables standard errors of the parameters in achievement models to be correctly estimated; it also enables both the between-school and within-school variations in achievement scores to be modelled. For these reasons HLM analysis is a methodologically more valid technique for estimating school and sector effects. However, the first stage in developing these models is to conduct preliminary analysis using Ordinary Least Squares (OLS) which enables key pupil-level and school-level predictor variables to be identified.

This paper presents some of the results of this study, focusing on the derivation and estimation of the achievement models using OLS Although it must be borne in mind that the standard errors of the coefficients in the models will tend to be underestimated in OLS regression models, this analysis provides

the basis and direction for further investigation and provides useful insight about the factors affecting achievement Hence, the results are discussed in some detail here

Research on the Public/Private Differential in India and the Use of Achievement Models

Two well-known studies on the comparative performance of the public and private sectors in India were conducted by Shukla (1974) and Govinda and Verghese (1991). The former was done as part of the 1971 IAEEA survey on attainment of pupils in science and mother tongue which incorporated a small sample of pupils from private secondary schools in Delhi. While the overall mean score for India was the lowest among all the fourteen participating countries, the performance of pupils in Indian private schools was far superior, with mean performance being almost twice that of the regular sample and comparable to that of pupils from the developed countries (Shukla, 1974)

Methodological issues that are pertinent to comparisons of public and private schools are highlighted by this study The difference in effectiveness between the public and private schools was calculated on the basis of simple means, unadjusted for differences in student background. Academic achievement is produced partly by the school and partly by the social environment (the immediate family as well as the community) in which the child grows up. If schools differ on the intake characteristics of their pupils, comparisons on the basis of gross outcomes unadjusted for these differences can be misleading. In order to separate the effects of the out-of-school factors, it becomes necessary to postulate some model of how achievement is "produced", or, more precisely, to quantify the nature of the systematic relationship between academic achievement and a variety of school and non-school factors In order to keep the problems of statistical estimation of the parameters tractable, it is usual to formulate linear models which assume that the effects of different variables are additive, with easily measured 'inputs' which are often proxies for the 'true' variables of interest.

Such achievement models were developed by Govinda and Verghese using the Ordinary Least Squares regression analysis to estimate the determinants of achievement and the private school effect. The study examined, among other things, differences in achievement between the public and private schools in five districts of Madhya Pradesh using tests in mathematics and Hindi. The performance of pupils in unaided schools, after controlling for background characteristics and essential school inputs, was higher, both in mathematics and language, than that of pupils in either private aided or government schools However, very few school-level variables could be found to explain the

variation in achievement levels.

Characteristics of Public and Private Sectors in Tamil Nadu

Primary education in Tamil Nadu is provided by three types of suppliers. Public schools are financed entirely out of budgetary resources of the State government. The main source of funds for private aided schools is also the State government but private managements provide the infrastructure and facilities and meet most of the non-salary recurrent expenditure The third important sector comprises private unaided schools which rely on user-charges to cover their costs and are virtually unregulated. These schools are free to choose any of the syllabi recognised by the Government of Tamil Nadu and to offer instruction in any language of their choice. Almost all the unaided schools, however, are English-medium schools Three main types of syllabi are offered, namely those of the Matriculation, Anglo-Indian and Central Boards of Education Amongst the unaided schools in Tamil Nadu, the matriculation schools remain the most popular and the sample of unaided schools used in this study was drawn from the latter only.

Public, private-aided and unaided schools differ in the extent to which they enjoy managerial flexibility. The management of public schools is highly centralised. Lower levels of administration and management (at the district, block and school levels) do not have either the authority or the means to take decisions regarding the appointment and supervision of teachers, adaptation of the syllabus or the procurement of additional materials There is virtually no evaluation of pupil performance in primary classes. Private-aided schools face a regime similar to that for public schools but there are two important differences First, the managements enjoy the authority to interview teachers and grant appointments, although the list of potential candidates is common to all public and aided schools They also exercise great supervision over the daily functioning of schools Second, they are free to spend on additional materials and additional teachers from privately mobilised resources

The management of unaided schools is entirely different. Schools in this sector are free to choose their location, to hire and fire teachers and set salaries. At the primary level, they are also free to set criteria for teacher qualifications and training. They can choose the mix of inputs, including the pupil-teacher ratio and material inputs (which are tightly controlled in the public sector by norms laid down by the State government) Evaluation of pupil performance is school-based and is usually tightly monitored. Furthermore, unaided schools are free to set fee levels and raise additional resources from families and other sources for school-related activities.

An important objective of the research was to investigate whether the greater managerial discretion and authority associated with the private sector results in higher effectiveness However, this means that students background and the social composition of the pupils, which are also known to effect achievement, must be adequately controlled The three types of schools differ considerably in their social composition because they differ in the extent to which pupils bear the direct costs of education In the public and aided schools, there are no tuition fees and textbooks and uniforms are supplied free of cost. There are many children from agricultural labour and scheduled castes households and families with irregular income Many students in state-funded schools are first-generation learners and many dropout after Class V and VIII in order to take up employment in agricultural and other traditional occupations. Although there are different reasons for some families choosing private unaided schools in Tamil Nadu[3], the common feature of all the children in these schools is that they intend to complete secondary schooling and are aspiring for employment in State government service or the organised private and public sectors in non-traditional and non-agricultural occupations. These pupils will therefore differ from pupils in the state-funded schools in their motivation and the parental support they receive.

Another important objective of the research was to identify school characteristics which are important determinants of achievement.

Sample Size and Instruments

A multi-stage sampling design was used, yielding an analytic sample of 2,667 pupils in 113 schools (65 public, 28 private aided and 20 private unaided) located in five districts of the State There were 72 rural and 41 urban schools in the sample. A maximum of 25 students and five teachers per school were selected, using systematic selection with a random start The outcome variables used in this study were raw scores on standardised tests in mathematics and reading comprehension (Tamil), a test on Word Knowledge, which proxied verbal ability and was used as an explanatory variable, was also administered in Tamil.[4] These tests were developed and validated by the National Council of Educational Research and Training, New Delhi and were based on the Class IV curriculum. They were administered to Class IV pupils towards the end of the academic year in early 1992. Background information on pupils, teachers and schools was collected through personal interviews using pre-tested instruments.

Descriptive Statistics

The detailed descriptive statistics reported in Tables 1 and 2 provide a bird's

eye view of the state of primary education in Tamil Nadu Average student performance in both mathematics and reading comprehension was extremely low, about 30-35% of the maximum score (Table 1) The maximum scores were 40, 44 and 40 for the mathematics, reading comprehension and Word Knowledge tests, respectively There were some differences between rural and urban areas (performance in the former actually being higher) and between public, aided and unaided schools. These differences, however, cannot overshadow the main result that average levels of performance are unacceptably low in both areas and all sectors.

Private unaided schools were clearly more advantaged than their public or aided school counterparts, in terms of their student composition as well as teacher inputs and physical facilities (Table 2). There were very few children from agricultural labour and scheduled castes households in the former In general, both parents were educated and most pupils also wished to study up to college level. Nearly all pupils had attended pre-school and a substantial proportion took extra tuition outside school hours. Teachers in unaided schools were graduates, about half of them with graduate-level teacher training In the unaided sector, the pupil-teacher ratio was half that in aided and public schools

By contrast, public schools had a disproportionate share of children from agricultural labour, scheduled castes and illiterate households Many children worked regularly both in unpaid household work and paid employment and some were absent from school to help with household work Teachers had, on an average, ten years of general education and a diploma in teacher training Many schools were multigrade and some had only two teachers to handle five classes. Physical facilities were deficient both in terms of quantity and quality, most classrooms were not separated by any kind of partition and a number of classes were regularly held outside

TABLE 1
Summary of Test Performance by Locality, District, School Management

(1991)	Mathematics			Word Knowledge			Reading Comprehension			Literacy Rate
	Mean	S.D	N	Mean	S D.	N	Mean	S.D.	N	
All Pupils	13 48	6 53	2729	19 31	7 55	2710	14 07	7 41	2710	
Rural	13 99	7 11	17.38	19.04	7 50	1723	14 17	7 72	1723	
Urban	12 58	5.26	991	19 78	7.61	987	13 88	6 84	987	

(1991)	Mathematics Word			Reading Literacy Knowledge			Comprehension			Rate
	Mean	S D	N	Mean	S D	N	Mean	S D	N	
By District										
South Arcot	12 14	5 94	1073	17 82	7 52	1072	13 23	7 32	1072	45 8
Periyar	15 19	6.66	540	21 69	2 26	540	15 42	7 49	540	48 7
Ramnad	15 26	7.94	399	20 82	8 63	395	15 19	7 97	395	52 5
Kanyakumari	14 83	6.95	220	19 42	6 90	207	14 40	7 22	207	72 1
Madras	12.35	5 31	503	19 35	7.93	496	13 36	6 80	496	72 5
By Management										
Unaided	14 98	5 84	469	23 56	6 59	451	15 23	6 60	451	
Rural	19 62	6 97	94	25 20	5 39	81	18.76	8 09	81	
Urban	13 82	4 88	375	23 18	6 77	370	14 46	5 97	370	
Aided	14 68	7 13	688	18.04	7 54	687	14 42	7 98	687	
Rural	15 18	7 75	438	17 42	7 30	437	13 37	7 48	437	
Urban	13 82	5 80	250	19 13	7.82	250	16 25	8 49	250	
Government	12.51	6 28	1572	18 65	7 39	1572	13 58	7 33	1572	
Rural	13 13	6 86	1206	19 22	7 45	1205	14.16	7 67	1205	
Urban	10 49	4,55	366	16 80	6 88	367	11 68	5 67	367	

Note 2,729 valid test papers in mathematics,
2,710 valid test papers in Tamil

TABLE 2

Characteristics of Pupils and Schools
Pupil Level Variables
(Percentage of pupils within each management category)

		Rural			Urban		
		Unaided	Aided	Govt	Unaided	Aided	Govt
Girls		40 7	47 7	47 3	44 9	46 2	53 4
Scheduled Castes/Tribes		7 4	23 6	25 7	9 3	34 0	41 6
Both parents educated		84.0	47 0	36 8	88.5	56.7	53 1
Father illiterate		2 5	25 7	30 4	2 7	15 4	22 9
Mother illiterate		14 8	46 3	58 8	9 6	38 1	39 7
Both illiterate		1 2	19 0	26 2	0.8	10 1	15 6
Occupation[5]	1	0 0	23 9	34 7	0 0	10 1	22 1
"	2	30 9	56 8	46.4	25 5	58 3	51 8
"	3	7 4	6 0	9 2	55 8	10 5	6 4

	Rural			Urban		
	Unaided	Aided	Govt	Unaided	Aided	Govt.
" 4	18 5	9 7	4.6	26 9	16 2	16 8
" 5	43 2	3 5	5.2	41 8	4 9	2 8
Mother works	14 8	49 1	63 8	15 9	36.4	49 4
Siblings (No)	1 83	2 69	2 67	1 79	2 84	2 77
Absent due to work	1.2	9 5	20 9	0 0	8 5	10 6
Works for payment	0 0	9 7	10 4	0 0	2 8	10 1
Mother Tongue						
Tamil	59 6	85 7	97 5	82 1	96 8	93 6
Telugu	2 1	4 8	1 5	8 8	1 2	1 9
Malayalam	13 8	0 5	0.0	3 7	0 0	0 3
Urdu	24 5	2 5	0,0	2 9	1 6	4 2
Other[6]	0.0	6 5	0,0	2 4	0 4	0 0
Repeater	6 2	26 6	34 9	17 3	23 5	29 5
Attended pre-school	88.9	43 1	66 1	98 9	61 1	68 4
Takes tuition	79 0	12 3	7 5	45,8	31 2	18 4
High Educational asp	70 4	47,0	38 3	83 3	47 8	30 7
High Occupational asp	67.9	42.1	33,8	75 1	47 0	38 3
Receives assistance from family	53 1	55 8	59 5	74,5	56 7	49,7
Has all textbooks	98 8	76,6	75 6	69 3	64 5	64 3
Reads other books	52 1	33,6	28 8	51 2	36 4	34 3
Does more than 1 hr homework regularly	22 2	8 3	5 8	12,1	7 3	5 0
Time for study (minutes)	198	95	89	190	130	102
Attended less than 80% of school days	3 0	5,0	9 0	7 0	9 0	17 0
Teachers (Average)						
No of pupils	427	320	181	1203	724	445
No, of teachers	19 8	8 2	4 6	41,8	15,0	11 3
Pupil-teacher ratio	22 5	42 7	43 6	26 3	47 5	40,2
Class-teacher ratio	0 9	1.5	1.5	0 8	1,0	1 2
Schools with only two teachers (%)	0.0	16 7	20 0	0 0	0 0	6.7
Schools requiring additional teachers (%)	0 0	50 0	68 0	6,3	70 0	60.0

	Rural			Urban		
	Unaided	Aided	Govt	Unaided	Aided	Govt
Specialised teacher in mathematics (primary classes)	1 00	0 00	0 00	1 00	0 00	0 00
Teacher salary/pupil (Annual Rs.)	292.0	767 0	779 0	527.0	651 0	784 0
Average monthly teacher salary (Rs)	472 0	1720 0	1518 0	845 0	1881 0	1601 0
Fraction >45 yrs old	0 000	0.44	0 45	0.04	0 57	0 62
Fraction <25 yrs old	0 65	0 37	0 28	0 49	0 17	0 18
Average experience (yrs)	3 0	14 5	16 0	6 3	18 3	19 9
Average experience in current school (yrs)	1 8	11 5	7 2	3 5	13 6	8 9
(As fraction 0 00-1 00)						
With graduate education	1 00	0.50	0 08	0 81	0 06	0 23
With no training	0 00	0 20	0 28	0 01	0 14	0 20
With graduate training	1 00	0 28	.06	0.91	0 04	0 13
Fraction with high score (4 out of 5 marks)	0 35	0 26	0 44	0.60	0 62	0 39
Material Inputs						
Non-teaching recurrent expenditure/pupil (Annual Rs)	151 0	25 0	37 0	192.0	26 0	52.0
Headteachers						
HM graduate (%)	100.0	27.8	8 0	100 0	30 0	53 3
HM grad trg (%)	100 0	28.0	6 0	100 0	30 0	40.0
Experience in years						
As teacher	13 8	7 8	5 3	9.3	14.9	15 4
As head	2.8	13 2	23 0	6 6	9 2	13 9
Head cur school	1 0	11 3	11 6	5 3	8 0	7.3
Periods taught per week	18 5	29 9	30.7	12 8	29.9	26 6
(% of headteacher)						
Adapts syllabus	100.0	16.7	26 0	87.5	30 0	6 7
HM self motivated	25.0	27 8	24 0	43.8	20 0	26 7
Uses test performance to evaluate teachers	50 0	66 7	48 0	75 0	70 0	33.3

	Rural			Urban		
	Unaided	Aided	Govt	Unaided	Aided	Govt
Meets teachers	50 0	22 2	10 0	31.3	50.0	13 3
Mobilizes funds	25 0	22.2	18 0	43 8	20 0	13 3
Organises remedial classes	75 0	33 3	20 0	68 8	30 0	26 7
School Facilities						
Floor space/pupil (sq ft)	15 9	10 3	9 2	18 8	7 9	21 2
Area per class (sq ft.)	412 0	293 0	271 0	630 0	321 0	686 0
Schools with at least two classes without partition (%)	0 0	77 8	94 0	6 3	50 0	86.7
Drinking water facility (%)	100.0	77 8	68 0	100 0	100 0	66.7
Electricity (%)	75 0	33 3	20.0	100 0	80 0	40 0

The Determinants of Achievement

As noted earlier, preliminary analysis using Ordinary Least Squares was conducted to identify important predictor variables at both the pupil and school levels which could be used in the subsequent HLM analysis and to eliminate variables with little explanatory power. The initial examination of the data had also shown that there were noticeable differences between rural and urban areas in achievement levels as well as in pupil composition and school characteristics. It was hypothesised that the effect of these characteristics on achievement might vary across rural/urban areas because of the different social, cultural and administrative settings in which schools operate in the two contexts Another purpose of this preliminary analysis was to test whether there was a significant difference in the structural parameters when the model was fitted separately for rural and urban areas

Annex Table 1 gives the means and standard deviations of variables used in the analysis

Dependent Variables

The two student outcome variables considered in this analysis are achievement in mathematics and reading comprehension Raw scores on each of the tests, unadjusted for guessing, were used as the dependent variables.

Student-level Predictors

The raw score on the Word Knowledge test was used as a measure of prior attainment, following the practice of earlier IAEEA surveys of achievement Other prior schooling experiences were measured by repetition and pre-primary education. Caste and gender were considered two important predictors because of the lower levels of educational support received by children belonging to the scheduled castes, the performance of these groups is likely to be lower The gender effect, on the other hand, could be either positive or negative Most studies have shown that girls usually perform better than boys in language but not in mathematics However, specific cultural factors which operate against girls in Tamil Nadu, both at home and in school, may lower their performance even in language

A dummy variable indicating whether the student's guardian was in a non-agricultural occupation was used as a measure of economic status. Several indicators of poverty status were also included (household size, number of siblings, absenteeism due to household work and participation in paid labour) Dummy variables measuring whether the father and mother are educated proxy opportunities and support for learning at home Indicators of educational environment at home included the pupil's aspirations (whether he or she wanted to study up to Class XII or beyond), whether a family member assists with homework, whether the pupil reads books or magazines other than textbooks and the total time spent on homework and tuition Attendance was measured by the number of days of attendance between July and December, this period represents two-thirds of the academic year

School-level Predictors

School-level predictors were grouped into four broad categories: (i) Teacher inputs; (ii) Headteacher and management variables; (iii) School facilities, (iv) School social composition.

The level of teacher input was indicated by the number of teachers, the class-teacher ratio and whether the school was a multigrade school or a two-teacher school. The number of teachers and the class-teacher ratio were preferred to the more frequently used pupil-teacher ratio which tends to be unreliable due to the inflation of official enrolment figures

Teacher quality was measured by the average years of teaching experience. In the mathematics achievement function, the proportion of teachers who scored at least 4 marks out of 5 in a simple test on mathematics subject-matter was used as an additional variable reflecting teacher quality[7]. Given the ambiguities associated with teacher salaries as a measure of teacher quality, this

variable was not included in the analysis Teacher variables included in the analysis were measured by averaging teacher responses for all sample teachers in the school The rationale for doing this is that in most government and aided schools, even where individual teachers may be nominally assigned to different classes, pupils are in fact taught by all primary teachers. Further, the average teacher quality captures the effect of what pupils have been exposed to over the entire primary cycle. Pupil outcome is therefore treated as the result of the average teacher quality in the school rather than of the Class IV teacher in particular

The main headteacher characteristics considered were whether the headteacher had graduate educational and professional qualifications. Management and academic aspects of schools were captured by whether the headteacher organised remedial classes, whether he or she held regular meetings with other teachers in the school and whether he or she spent at least one hour a week on checking teachers' class notes and students' tests. Headteacher self-motivation was measured by whether he or she considered the commitment and attitude of the head (as opposed to that of teachers, students or parents) to be the most important factor in school performance

Two measures of physical characteristics of schools were used: whether the school had electricity and whether the classrooms were separated by walls or partitions.

School social composition was measured by the proportion of pupils who have educated parents, the proportion of pupils from the scheduled castes or tribal background, and the proportion of pupils whose guardians work in the organised sector

Student-level Determinants of Achievement

Tables 3 and 4 report the coefficients, t-values and sums of squares for regressions using mathematics and reading comprehension scores as the dependent variables respectively.

The results obtained in the regression for mathematics achievement are reviewed first (Table 3) As expected, Word Knowledge score is a powerful predictor of achievement in mathematics. Attendance in pre-school, however, has no effect on achievement; in fact, there were no significant differences in the mean achievement of pupils who had attended pre-school and those who had not This may partly be due to the fact that the education component in preschool services provided by the government is negligible as they tend to concentrate on providing nutrition and child care facilities

Despite an extra year in school, repeaters do significantly worse. This is

explained by the fact that pupils are automatically promoted up to Class IV, irrespective of their achievement in the lower primary classes, those who are poor performers are detained in Class IV, when they tend to receive less attention from teachers Repetition is also likely to lower pupil motivation

Girls perform significantly better than boys in urban areas and in all schools taken together, but the scheduled castes pupils are no worse off than other pupils After controlling for differences in initial attainment and other factors in the model, there does not seem to be any special disadvantage for these students The economic status of the family, indicated by whether the guardian is engaged in a non-agricultural occupation, exerts a strong positive effect, especially in rural areas. Non-agricultural occupations reduce the likelihood of absenteeism due to seasonal work or migration; pupils are more likely to attend school regularly. A non-agricultural occupation is also a proxy for a higher income level which tends to reinforce better performance in school

Other indicators of the family's socio-economic status are also related to achievement in mathematics There is a significant and positive effect if the pupil has a working mother, especially in rural areas; although a working mother in rural areas is generally associated with lower social status (the higher social groups do not send women out for agricultural work), it may indicate higher income levels Student absenteeism to attend to household duties is, as expected, negatively associated with achievement Household size, however, has no effect.

Neither father's education nor mother's education seem to affect student performance, since these were measured as dummy variables, they are crude indicators of the quality of the educational environment at home. However, other indicators show a positive effect: these include educational aspirations (for the entire sample) and the time spent on study (in the rural sample and for the entire sample). Reading books and magazines other than textbooks has a positive effect only in urban areas. This may be due to the quality of the books and magazines that children have access to in rural areas; most children reported reading children's comics only. The number of days of attendance has a strong positive effect in urban areas.

Turning to the regression for reading comprehension, it can be seen that many of the significant pupil-level determinants are common and their effect is in the same direction, although some differences can be noted (Table 4) As with mathematics achievement, the Word Knowledge score is the most important predictor. The other significant effects are for girls (positive and significant for the total, rural and urban samples), high educational aspirations and the amount of study time. The direction of the effects is also similar to those obtained in the fitted mathematics function. Scheduled castes status and

parental educational status are, as before, not related to reading comprehension achievement On the other hand, unlike in the regression for mathematics, the effect of occupation is not significant even in rural areas and most of the indicators of socio-economic status are not related to achievement taking the sample as a whole. Only a working mother and student absenteeism exert a significant effect in rural areas alone. The effect of repetition on reading achievement is also not significant. The availability of other books has a positive effect in urban areas and a significantly negative effect in rural areas, reinforcing the suspicion about the poor quality of reading material.

While the similarity of pupil-level effects in the two sets of regressions strengthens perceptions about the reliability and consistency of the results, the lack of significance of most of the variables measuring social or economic status in the reading comprehension equation appear contrary to the findings of earlier studies. Most studies have found that the effect of family background is more pronounced for language than for mathematics, because knowledge of the latter is essentially acquired in schools whereas language ability is greatly influenced by the home environment However the finding is not so counter-intuitive as it appears when we consider the fact that the language test measured reading skills only, and that school textbooks constitute virtually the entire reading material available to most children in Tamil Nadu (including those in the sample unaided schools). The paucity of children's literature in Tamil and other regional languages is a well-documented fact. Even parents of pupils in unaided schools will not generally provide extra reading material in Tamil as the medium of instruction is English Furthermore, the Tamil language has special features which may also help to explain the finding. According to many linguistic experts, the gap between the spoken and written language in Tamil is much wider than in many other languages, including other Indian languages, which makes it more difficult to learn reading and writing (Saraswathi, 1989) Unfamiliarity with the syntactic structure used in written language may also constitute another source of comprehension difficulties Hence, it is probable that the kind of reading skills required in the achievement test, which included not only decoding but comprehension and inferential skills as well, are acquired mainly through formal instruction in school and is largely independent of the economic and educational status of the family

School-level Determinants of Achievement

A number of school characteristics were found to have a statistically significant influence on achievement and they are discussed in some detail here, although it must be borne in mind that standard errors of the coefficients tend to be underestimated

The sector coefficients for the two achievement models measure the effect of the unaided sector and the aided sector, after controlling for all other factors in the model. Public schools form the reference category for the two sector dummy variables. These sector effects are of interest because they take into account the initial attainment of pupils, which as noted earlier is an important mechanism for selecting students for admission in unaided schools. The results show that, in general, there is a significant and strong negative effect for unaided schools — in reading comprehension (all three equations) and in mathematics (urban areas). The former can be explained by the fact that students in unaided schools have little exposure to reading Tamil so that although they perform relatively well on verbal ability tests, they do not perform as well as predicted in reading and comprehending connected prose in Tamil A likely reason for the negative sector effect in mathematics in urban areas is the effect of the medium of instruction which may impede learning of mathematics skills

Aided schools exert a strongly positive effect on mathematics achievement (in all three regressions) but the effect for reading comprehension are mixed It is significantly negative in rural areas, significantly positive in urban areas, and not significant at all when the entire sample is used One interpretation of this result is that, in rural areas, aided schools put greater emphasis (relative to public schools) on mathematics achievement rather than on general reading comprehension skills because the performance of schools is often judged on the basis of pupils being able to enter professional or science courses which required adequate mathematical skills. This might indicate a degree of curricular specialisation among rural aided schools which apparently train their pupils for entering the more desirable science/professional courses as the main avenue for escaping from low-income traditional occupations. This kind of curricular specialisation is not indicated in urban areas, where the aided school effect for both mathematics and reading comprehension achievement is significantly and strongly positive, although the level of significance is lower for the latter. These conclusions must of course be regarded as tentative.

The effect of the level of teacher inputs is somewhat ambiguous. For mathematics achievement, the number of teachers has a significant positive effect, for reading comprehension achievement, however, the effect is negative in urban areas. Multigrade teaching has a negative effect, as expected. Schools with only two teachers and the class-teacher ratio exhibit opposite tendencies for mathematics and reading comprehension, respectively. The class-teacher ratio has a positive effect on mathematics achievement, indicating that (controlling for other factors) schools where teachers handle more than one class actually do better, this would mean that, for instance, in a multigrade situation, the number of classes handled by a single teacher (usually two or three) does

not negatively affect mathematics achievement For reading comprehension, on the other hand, the class-teacher ratio has the expected negative effect. It is possible that this effect could be explained by the peculiarities involved in teaching each subject the teaching of mathematics can be more easily conducted with peer group teaching and giving problems to an entire class while the teacher engages another class The teaching of reading skills, on the other hand, requires greater individualised attention

Of the two-teacher quality variables which were considered, subject-matter mastery exerted a very strong positive effect on mathematics achievement. This variable was excluded from the regression for reading comprehension Average years of teaching experience had a negative effect (for mathematics in the total and urban samples and for reading comprehension in the total sample). This reflects the presence of older teachers, who tend to have lower levels of education and motivation and are also unfamiliar with the subject-matter of the new curriculum

Among the headteacher variables, the headteacher's self-motivation had a strong positive effect in the rural and total samples for both mathematics and reading comprehension The checking of student tests by headteachers also had a more or less uniform strong positive effect On the other hand, the effect of the checking of teachers' notes was more ambiguous (for mathematics, negative in rural areas and positive in urban areas; for reading comprehension, negative in rural areas) Teachers in Tamil Nadu, including those in government schools, are required to prepare notes on lesson preparation every week; by and large they do prepare them as a matter of routine The checking of these notes by the headteacher is also more or less a matter of routine and hence does not provide a good indicator of either academic supervision or leadership. The organising of remedial classes also has opposite effects in rural (positive) and urban areas (negative) In the former, it may indicate the special efforts made by the headteacher to improve school performance, in the latter, it probably indicates the presence of large numbers of low-performing students

The dummy variable for the headteacher's educational status (whether he or she is a graduate) also produced mixed results. In the regression on mathematics achievement, the effect is large and significantly negative in rural areas and significantly positive in urban areas. In the combined regression, the effect is weakly negative but nonetheless statistically significant In the regression on reading comprehension achievement, the effect is significant only in urban areas where it is positive. Apparently, the headteacher's education status exerts a different influence in the two areas In rural areas, headteachers in aided schools who have acquired graduate-level qualifications are probably trying to leave their posting in small remote rural schools by seeking promotion

as headteachers of middle or secondary schools or as AEOs in the administrative apparatus of the Education Department In urban areas, most of the sample headteachers who had graduate qualification were in unaided schools, in aided and government schools, such headteachers, although overqualified for their post, may not be as anxious to leave their posts as those in rural schools

Pupils in schools with better physical facilities score higher. The effect of electricity is strongly positive, while schools with no partitions between classes have a significant negative effect only in rural areas This is expected because the phenomenon of no partitions between classrooms is restricted largely to rural areas, where there are usually only one or two large rooms

Of the social composition variables, the proportion of students from the scheduled castes or tribes background has the expected negative sign and is significant. The effect of the proportion of educated parents and of guardians working in the organised sector was influenced by a few outliner schools with extreme values on these variables

For both sets of regression, the F-statistics computed for testing whether there is a structural difference in the parameters was significant at the 001 level, the null hypothesis that the parameters are the same for rural and urban samples was rejected This finding is consistent with *a priori* reasoning which suggests that effects of individual factors influencing achievement would be considerably modified by two widely different social and economic contexts.

TABLE 3
Ordinary Least Squares Regression Dependent Variable: Mathematics Achievement Score
(Coefficients and t-values in parentheses)

	Total	Rural	Urban
Pupil characteristics			
Word Knowledge	0 284 (17 845)	0 276 (12 951)	0 218 (10.658)
Pre-School	0.029 (0 115)	0 213 (0 684)	0 243 (0 657)
Repeater	- 485 (-1.947)	-.378 (-1 186)	-.634 (-1.952)
Girl	0 472 (2 101)	0 346 (1 184)	0 758 (2.726)
Scheduled Castes	0 299 (0 942)	0 245 (0 588)	0.327 (0 382)
Non-agricultural	0.625 (2 282)	1 179 (3 691)	- 686 (-1 318)
Mother works	0 467 (1 899)	0.954 (2 977)	-.171 (- 548)
Absent due to work	-.718 (-2 080)	-1.067 (-2 635)	- 199 (1 336)
Household size	- 019 (- 317)	-.056 (- 723)	0.091 (1 259)
Father educated	0 381 (1 311)	0 262 (0 745)	0 541 (1 258)
Mother educated	-.099 (- 379)	-.128 (- 384)	0 287 (0 846)
High education aspiration	0 506 (2 064)	0 244 (0 786)	0 379 (1 154)
Minutes of study	0.004 (2 029)	0 009 (3 420)	0 003 (1 095)
Reads other books	0 162 (0 662)	- 139 (0.417)	0 534 (1 775)
Attendance (days)	0 002 (0 185)	- 008 (- 676)	0 033 (3 095)

	Total	Rural	Urban
School characteristics			
Unaided	- 615 (- 835)	1 593 (1 230)	-3 114 (-3.328)
Aided	1 609 (5 355)	1 229 (2 904)	1 774 (3 507)
No of teachers	0 026 (3 569)	0 137 (4 150)	0 047 (7.354)
Multigrade teaching	-1 276 (-3 590)	-.582 (-1 249)	0 356 (0 558)
Two-teacher schools	-1 001 (-1 625)	- 329 (- 465)	-3 639 (-1 902)
Class teacher ratio	1 901 (5 4933)	1 620 (4 055)	- 791 (- 641)
Average years of teaching experience	- 061 (-3 646)	0 007 (0 331)	- 184 (-5 591)
Proportion of teachers scoring at least 4 out of 5 marks in maths	2 449 (7 149)	1 857 (4 056)	3 039 (5 228)
Graduate head teacher	- 864 (-2 490)	-1 84 (-3 037)	1 079 (2 418)
Head Teacher's self-motivation	1 482 (5 355)	2 797 (7 507)	0 538 (1 443)
Head teacher spends 1 hr checking tests	1 303 (4 725)	1 078 (2 715)	1 486 (3.848)
Head teacher spends 1 hr checking notes	0.504 (1 335)	-1 480 (-2 490)	2 234 (4.953)
Head teacher meets teachers regularly	1 417 (4 515)	2 176 (4 255)	-1 070 (-2 463)
Remedial classes organised	1 023 (3.534)	1 781 (3 836)	-1 707 (-4 488)
No partitions between classrooms	0.296 (0 782)	-1 490 (-2 429)	- 525 (-1 070)
School has electricity	0 722 (2 184)	1 565 (3 431)	- 843 (-1 420)
Proportion of pupils from SC/ST background	-3 219 (-5 783)	-3 361 (-4 480)	-3 712 (-3 933)
Proportion of pupils with at least one educated parent	0.858 (1.006)	3 079 (2.646)	-7 675 (-4.383)
Proportion of pupils from organised sector	-5 639 (-4 789)	-7 138 (-3 154)	-0.067 (-0 044)
Constant	3 363 (2 392)	3 645 (1.901)	8 747 (3 732)
Multiple R	0 522	0 589	0 648
R Square	0 273	0.345	0 420
Adjusted R	0.264	0 3325	0 398
S E.	5 622	5 8357	4 072
Regression sum of squares	31,216 27	29,897.82	11,211 75
DF	34	34	34
Residual sum of squares	83,130.94	56,527 99	15,502 80
DF	2630	1660	935
F	29.05	25 83	19 89

Unrestricted residual sum of squares

$e' e = e'_1 e_1 + e'_2 e_2 = 56,527\ 99 + 15,502\ 80 = 72,030\ 79$

Restricted residual sum of squares
$e'_r e_r = 83,130.94$

$F = 11.43$

TABLE 4

Ordinary Least Squares
Dependent Variable : Reading Comprehension Achievement Score
(coefficients and t-values in parentheses)

	Total	Rural	Urban
Pupil characteristics			
Word Knowledge	0.437 (24.392)	0.438 (19.073)	0.356 (13.020)
Pre-School	-.018 (-0.065)	-.214 (-0.635)	0.104 (0.210)
Repeater	-.085 (-0.302)	0.099 (0.289)	-.216 (-0.503)
Girl	1.001 (3.955)	0.655 (2.071)	1.579 (4.257)
Scheduled Castes	0.067 (0.187)	-.062 (-0.134)	0.295 (0.579)
Non-agricultural	0.230 (0.747)	0.342 (0.991)	0.875 (1.262)
Mother works	0.272 (0.981)	0.635 (1.836)	-.208 (-.503)
Absent due to work	-.570 (-1.463)	-.992 (-2.264)	-.693 (-.872)
Household size	0.047 (0.716)	0.018 (0.211)	0.038 (0.392)
Father educated	0.426 (1.298)	0.339 (0.892)	0.294 (0.513)
Mother educated	-.499 (-1.678)	-.442 (-1.223)	-.321 (-.709)
High education aspiration	0.654 (2.373)	0.079 (0.235)	1.242 (2.887)
Minutes of study	0.005 (2.264)	0.007 (2.446)	0.002 (0.918)
Reads other books	-.244 (-0.881)	-.983 (-2.730)	1.182 (2.964)
Attendance (days)	0.006 (0.647)	-.022 (-1.659)	0.058 (4.117)
School characteristics			
Unaided	-5.20 (-6.261)	-3.584 (-2.569)	-4.406 (-3.655)
Aided	-.219 (-0.634)	-1.701 (-3.893)	1.455 (2.181)
No. of teachers	-.016 (-1.980)	0.136 (3.824)	-.016 (-1.892)
Multigrade teaching	-.847 (-2.114)	-.127 (-0.253)	-1.151 (-1.359)
Two-teacher schools	3.823 (5.510)	4.499 (5.897)	-7.916 (-3.162)
Class teacher ratio	-1.194 (-3.058)	-1.208 (-2.790)	-.060 (0.039)
Average years of teaching experience	-.064 (-3.351)	-.007 (-0.330)	-.034 (-0.783)
Graduate head teacher	0.236 (0.606)	0.700 (1.079)	1.154 (1.942)
Head teacher's self-motivation	1.610 (5.228)	3.085 (7.727)	0.819 (1.675)
Head teacher spends 1 hr checking tests	-.274 (-0.882)	1.078 (2.715)	2.061 (4.009)
Head teacher spends 1 hr checking notes	-.327 (-0.792)	-1.553 (-2.416)	0.476 (0.859)
Head teacher meets teachers regularly	1.568 (4.429)	1.623 (2.934)	2.297 (4.019)
Remedial class organised	-.072 (-0.222)	1.048 (2.144)	-1.499 (-2.986)
No partitions between classrooms	-.058 (-0.136)	-1.882 (-2.852)	-.431 (-0.674)
School has electricity	1.261 (3.477)	0.830 (1.694)	0.132 (0.170)

	Total	Rural	Urban
Proportion of pupils from SC/ST background	-1.535 (-2 445)	-1 914 (-2 360)	-4 450 (-3 655)
Proportions of pupils with at least one educated parent	4 148 (4 309)	8.999 (7 267)	-12 590 (-5.432)
Proportion of pupils from organised sector	-1 034 (-0.780)	-10 21 (-4 215)	10 835 (5 294)
Constant	4 059 (2 564)	6 932 (3.355)	1 758 (0 562)
Multiple R	0 530	0.589	0.628
R Square	0.281	0 347	0 395
Adjusted R	0.271	0 333	0 374
S E	6 345	6 314	5.438
Regression sum of squares	41,289 83	35,173 04	18,060 57
DF	33	33	33
Residual sum of squares	105,904 79	66,223 36	27,677 40
D F	2631	1660	935
F	31.08	26 73	18 51

Unrestricted residual sum of squares
$e' e = e'_1 e_1 + e'_2 e_2 = 66,223.36 + 27,677.40 = 93,900\ 76$

Restricted residual sum of squares
$e'\ e_r = 105,904\ 79$

$F = 9.76$

Conclusion

In trying to estimate the private school effect, it is necessary to ensure that the achievement model captures the effect of other variables that contribute to academic performance However, in the empirical derivation of achievement models, it has often proved difficult to identify predictors, particularly at the school-level, that explain differences in achievement. This fact has already been noted in the case of the study by Govinda and Verghese (1991) but other comprehensive reviews of the literature on educational production functions have also documented this for many studies conducted in a variety of settings (Hanushek, 1986, Heyneman, 1986)

However, the OLS analysis described above enabled a fairly large set of statistically significant school-level predictors to be identified These included, dummy variables denoting unaided and aided schools (the public sector being the reference sector for each dummy variable), macro characteristics of the school (such as the number of teachers, multigrade schools, two-teacher schools), the subject matter proficiency of teachers (in mathematics), headteacher

variables and school composition

The main conclusion of the above analysis is that after controlling for school variables and other pupil background variables, private unaided schools performed worse than public schools Some possible reasons for this result have been discussed above. Among school-related variables, the variables measuring headteacher activities which influence classroom processes (such as checking of tests, regular meetings with teachers and the headteacher's motivation) have very strong, positive effects. This highlights the importance of school management in influencing achievement Similarly, the variables measuring the social composition of schools are also influential. Other important results include the fact that longer teaching experience seems to produce a negative effect (perhaps due to professional obsolescence), that scheduled castes/scheduled tribes pupils do no worse than other pupils and that girls performance is at least as good as that of boys It would of course be necessary to see whether these results are borne out by the statistically more valid HLM method.

This preliminary analysis also underscored the fact that there were significant differences between rural and urban areas in the structural parameters of the achievement functions

ANNEX TABLE 1
Names, Descriptions, Means and Standard Deviations of Variables

Variable Name	Total		Rural		Urban	
	Mean	S D	Mean	S.D.	Mean	S D
Dependent variables						
Mathematics score (0-40)	13 48	6 55	13 99	7 14	12 59	5 25
Reading comprehension score (0-44)	14.18	7,43	14 20	7 74	13 89	6 87
Pupil characteristics						
N	2667		1697		970	
Word knowledge score (0-40)	19.34	7 53	19 09	7 49	19 79	7.58
Pre-School (1,0)	0 67	0 47	0 61	0 49	0 78	0 41
Repeater (1,0)	0.28	0 45	0 31	0 46	0 23	0 42
Girl (1,0)	0.48	0 50	0 47	0 50	0 48	0,50
Scheduled caste (1,0)	0 25	0 44	0 24	0 43	0.28	0.45
Non-agricultural (1,0)	0 62	0 49	0 47	0,50	0.88	0 32
Mother works (1,0)	0.49	0.50	0.58	0.49	0 34	0.47
Absent due to work (1,0)	0 13	0 34	0 17	0.38	0 06	0 24
Household size (No)	5 83	1 91	5 99	1.88	5.82	1 95

Variable Name	Total		Rural		Urban	
	Mean	S D	Mean	S D	Mean	S D
Father educated (1,0)	0.77	0 42	0 72	0 45	0 87	0 34
Mother educated (1,0)	0 56	0.50	0 46	0 50	0 72	0 45
High education Aspiration (1,0)	0.47	0.50	0 42	0 49	0 55	0 50
Minutes of study	112 8	73 0	95.88	62 95	142 3	79.8
Reads other books (1,0)	0 36	0 48	0 31	0 46	0 45	0 50
Attendance (days)	122.4	13 5	123 02	12 26	121.2	15 5
School Chracteristics						
No of teachers	12 8	20.8	6 4	6 9	24 1	30 3
Multigrade teaching (1.0)	0 44	0 50	0 57	0 50	0 22	0.42
Two-teacher school (1,0)	0 12	0 33	0.18	0 39	0 02	0.16
Class teacher ratio	1 30	0 71	1 48	0 79	0 99	0 36
Average years of teaching experience	14 6	8 3	14 9	8 3	14 2	8 5
Proportion of teaching scoring at least 4 out of 5 marks in maths	0 44	0 37	0.39	0.38	0 53	0 35
Graduate head teacher (1,0)	0 35	0 48	0 18	0.39	0 66	0 48
Head teacher's self motivation (1,0)	0 27	0 45	0 25	0 44	0 32	0.47
Head teacher spends 1 hr checking tests (1,0)	0 46	0 50	0 38	0 49	0 61	0 49
Head teacher spends 1 hr checking notes (1,0)	0 22	0 42	0 14	0 35	0 37	0 49
Head teacher meets teachers regularly (1,0)	0 20	0 40	0 15	0 36	0 29	0 46
Remedial class organised (1,0)	0.33	0 47	0 26	0 44	0.44	0 50
No partitions between classrooms (1,0)	0 71	0 46	0 85	0.36	0 46	0 50
School has electricity (1,0)	0.43	0 50	0 26	0 44	0 73	0.45
Proportion of pupils from SC/ST background	0 25	0 26	0 41	0 21	0 67	0 21
Proportion of pupils with at least one educated parent	0 51	0 25	0 41	0 21	0 67	0.21
Proportion of pupils from organised sector	0 23	0 23	0 13	0 15	0.42	0 24

NOTES

1 The Department of Education grants recognition to schools satisfying certain minimum criteria These are denoted as recognised schools However, up to Class VIII, pupils may study in unrecognised schools (which are completely unregulated) and still be admitted into recognised schools provided they pass an entrance test Entrance tests are usually administered by individual headteachers and principals

2 A full description of the research can be found in S Bashir, "Public Versus Private in Primary Education Comparisons of School Effectiveness and Costs in Tamil Nadu" (Unpublished Ph D thesis) University of London, London School of Economics, 1994

3. These include the demand for English language skills, the demand for the enriched mathematics syllabus offered by matriculation schools and the demand for better quality schooling in basic skills and appropriate learning habits at the primary stage

4 For students in public and aided schools, all tests were administered in Tamil In unaided schools, the language tests were administered in Tamil while the mathematics test was administered in English which was the medium of instruction For this reason, only those pupils who were studying Tamil as a second language were selected For details of test objectives and administration as well as a discussion of the effects of language on the validity of the test, see Bashir (1994).

5. Occupational codes are 1 agricultural labour, 2 cultivator / traditional household industry, 3 non-traditional self-employed, 4 private sector (organised), 5 public sector

6. These are mainly Kannada-speaking pupils

7 The five questions were based on the primary level mathematics curriculum and were in part drawn from the trainers' manual used in the Programme for Mass Orientation of Teachers conducted by the NCERT after the introduction of the new curriculum

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Enrolment Projections in the Context of DPEP Project

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ABSTRACT

One of the main objectives of District Primary Education Programme which has been recently launched in 43 districts of 6 states is setting of the disaggregated targets. The National Policy on Education and its revised Policy Formulations (1992) and Eighth Five Year Plan also envisaged adoption of disaggregated target settings and decentralised planning. However in the recently concluded Overseas Development Administration and Government of India Appraisal Mission to nineteen districts of Madhya Pradesh under DPEP project, it has been noticed that in most of the districts, enrolment projection exercises have not been undertaken and targets of gross enrolment ratio have been fixed arbitrarily in all the blocks of the district without even knowing the grassroot realities Neither the aggregate nor the gradewise enrolments are projected Therefore, in the present article methodology of the enrolment projections with particular reference to district has been presented by taking actual data of one of the districts of the country.

ENROLMENT projections are one of the most important requirements of educational planning as they form the backbone of practically each single task involved in it Whether it is a question of opening of new schools or upgradation of existing schools or the number of schools and teachers required in future, none of these tasks can be accomplished unless the planner has an adequate idea of how many students will enter the system, how they will

proceed through various grades, and what number will graduate during the plan period Hence, over a period of time, it is therefore important to know total enrolment at all levels of education as well as in different grades for better and reliable educational planning. The National Policy on Education (NPE) and its revised Policy Formulations (1992) and Eighth Five Year Plan envisaged adoption of disaggregated target settings and decentralised planning. One of the main objectives of District Primary Education Programme (DPEP) which has been recently launched in 43 districts of 6 states is reducing the differences in enrolment, drop-out and learning achievement among genders and social groups to less than 5 per cent and reducing the overall primary drop-out rates for all students to less than 10 per cent Since in the DPEP districts, a number of schemes are proposed to be undertaken during the project period which are most likley to benefit children in the schools, it would be an additional advantage if disaggregated estimates of enrolment are made available at the block level separately for boys and girls, rural and urban areas and Scheduled Castes and Scheduled Tribes children. At the all India level one such exercise has been recently undertaken by Mehta (1995) but only few exercises are undertaken at the state level However, at district level no attempt has so far been made to project enrolment based on the established techniques and methods of enrolment projections

During the recently concluded (1994) Overseas Development Administration (ODA) and Government of India (GOI) Appraisal Mission to nineteen districts of Madhya Pradesh under DPEP project, it has been noticed that in most of the districts, enrolment projection exercises have not been undertaken and targets of Gross Enrolment Ratio (GER) in year 2001 have been fixed arbitrarily by assuming 20 per cent as an estimate of overage and underage children in all the blocks of the district without even knowing of the actual grass root realities Neither the aggregate nor the gradewise enrolments are projected In the absence of which it is rather impossible to estimate reliable annual number of beneficiaries, additional requirements of teachers, opening of new schools, etc As mentioned one of the other important objectives of the DPEP project is to reduce the existing level of drop-out rate for all students to less than 10 per cent which means a substantial increase in existing retention rate Though retention rate at Grade V has been calculated in all the DPEP districts of Madhya Pradesh, no attempt has been made to compute gradewise promotion, repetition and drop-out rates, all which play a significant role to obtain goals of Universalisation of Primary Education The UNICEF, GOI and Government of Bihar Appraisal Mission to Bihar Education Project (BEP) observed that process of disaggregated target setting has been started but the future targets on drop-out and retention rates are still fixed in an isolation without even knowing the current

status of grade-to-grade drop-out and retention rates. Also, targets on enrolment ratio (gross) have been fixed even without knowing the existing entry rate which in fact help us in identifying the disaggregated areas and groups within the district. In seven BEP districts, the methodology adopted in computing drop-out rate is not conventional which in most of the cases produced retention rate even more than 90 per cent (see BEP Appraisal Mission Report, 1994) Therefore, an attempt has been made in the present article to project gradewise enrolment for which a number of assumptions on apparent entry rate, drop-out and promotion rates are to be made about their likely trend in future For this, an exhibit based on one of the analytical methods, namely, Grade Ratio Method has been presented by using data of one of the DPEP districts of Madhya Pradesh, namely Rajgarh. However, the methodology proposed can be used to project enrolment in any district of the country

Population Projections*

One of the important factors on which future enrolment is based upon is age-specific and single-age population over a period of time Projection of age and sex distribution of population requires detailed information on base year vital rates and assumptions on a number of items, such as, expectation of life at birth, mortality rates in different age-groups separately for male and female population, sex ratio at birth etc Keeping in view scant demographic data at the state level, it is not possible to undertake detailed population projection exercise. Though, 1991 total population along with population in the age-group 0-6 years and its sex distribution is available for all the States and UTs but the age-group population has not yet been released by the Office of the Registrar General of India Fortunately, for fifteen major states estimates of the Standing Committee of Experts on Population Projections (1989) set up by the Planning Commission for the period 1990, 1995, 2000 and 2005 are available. Both age-specific and single-age population separately for male and female population are available but the same is based on population up to the 1981 Census. Therefore, the percentage of population in age group 6-10 years to total population and age '6' to population in age group 6-10 years have been worked out separately for boys, girls and total children With the help of Compound Growth Rate, intermediary year population projections have been obtained for the state of Madhya Pradesh. This can be repeated to any other state for which projected population is available through Standing Committee or any other

* In case of projected population of age-group 6-10 years and single age population ('6' years) during the period 1992 93 to 2000-01 is available, exercise of population projections at the district level may be avoided

TABLE 1

Projected Population. Madhya Pradesh

(Figures in Hundred)

	1989-90	1994-95	1999-2000	2004-05
Population				
Total	640054	708185	773854	840603
Male	330591	366073	400064	434509
Female	309484	342112	373751	406094
Population 6-10(%) *				
Total	12 32	12 28	11 52	10 65
Male	12 34	12 31	11 52	10 64
Female	12 29	12 24	11 52	10 65
Age '6' ** (%)				
Total	21 39	20 59	20 16	20 20
Male	21 44	20 59	20 13	20 11
Female	21 33	20 63	20.20	20 30

* Percentage to total population ** Percentage to population in age group 6-10 years

Source: *Standing Committee of Experts on Population Projections*, Planning Commission, Government of India, New Delhi, 1989

TABLE 2

Projected Population: Madhya Pradesh

(Figures in Hundred)

Year	State Population		District Rajgarh *	
	Female	Total	Female (@1.51%)	Total (@1.52%)
1989-90	309484	640054	4673	9729
1990-91	315748	653111	4768	9927
1991-92	322139	666435	4864	10130
1992-93	328659	680030	4963	10336
1993-94	335311	693902	5063	10547
1994-95	342112	708185	5165	10764
1995-96	348215	720862	5258	10957
1996-97	354427	733765	5352	11153
1997-98	360750	746899	5447	11353
1998-99	367186	760269	5545	11556
1999-2000	373751	773854	5644	11763
2000-01	379843	786777	5736	11959

* Based on District Percentage to Total State Population in Year 1990-91

TABLE 3

Projected Population
District Rajgarh

Year	Population (6-10 Years)		'6' Years	
	Female (@ 12 29%)	Total (@ 12 32%)	Female (@21 33%)	Total (@21 39%)
1989-90	574	1199	122	256
1990-91	586	1223	125	262
1991-92	598	1248	128	267
1992-93	610	1273	130	272
1993-94	622	1299	133	278
1994-95	635	1326	135	284
1995-96	646	1350	138	289
1996-97	658	1374	140	294
1997-98	669	1399	143	299
1998-99	681	1424	145	305
1999-2000	694	1449	148	310
2000-01	705	1473	150	315

agency Population in the Rajgarh district has been obtained by assuming that percentage of district population to state population in year 1991 would remain constant throughout the period i.e 1994-95 to 2000-01 Population of the age group 6-10 years and single age population '6' at the district level have been obtained by using percentages presented in Table 1 However, it would be better to distribute the deviation between actual and projected 1991 population in different age-group in share to total population (see Mehta 1995).

Enrolment Projection Techniques

The techniques of enrolment projections can broadly be classified into two groups, namely, mathematical and analytical methods (Mehta, 1992) Mathematical methods require aggregate enrolment data at least for ten years, and only total enrolment can be projected by employing both linear and non-linear equation methods These methods involve an extrapolation of the past into the future and assume that the past trend in enrolment would continue into the future On the other hand, in analytical methods, apart from actual enrolment, estimation, assumptions and targets on items like promotion, drop-out, repetition and entry rates (apparent) are required The demographic pressures on education can also be captured in the analytical techniques as the computation of intake/entry rate is based on the population of school entrance age, that is, '6' years This rate has a significant bearing on future enrolment. Analytical methods are based on 'Student Flow Model' which view education as a system,

which receives inputs in the form of new entrants, transforms these inputs through certain outputs in the form of graduates The student flow analysis starts at the point where students enter into an education cycle i e Grade I. The flow of student into, through and between an educational cycle is determined by five factors, namely, the population of admission age, intake/entry rate and the promotion, repetition and drop-out rates in the first and subsequent grades If the information on number of repeaters are available, the method is known as Grade-Transition Method, otherwise it is known as Grade Ratio Method. Thus, an element of judgement in terms of policy variables can be introduced in analytical methods Targets, assumptions and estimation on transition and entry rates should be feasible and based on the past trend, otherwise projection of enrolment would be far from reality.

The analytical techniques of enrolment projections require following set of data which are generally available at the district level and are also available in most of the DPEP districts

- — Future age-specific (6-10 years) and single age population ('6') up to years 2000-01
- — Gradewise enrolment for at least two consecutive years, say 1992-93 and 1993-94 and
- — Gradewise repeaters (optional) for the above years

Grade Ratio (pass percentage) in different years have been simply computed by taking percentage of enrolment in Grade II to previous year enrolment in Grade I and same for the remaining grades (Exhibit I) In case, if number of repeaters are also available, they are required to first take out from enrolment of Grade II and subsequent grades and then percentages from previous grades are to be worked out which are known as grade-to-grade promotion rates.

Exhibit I. Grade Ratios
District Rajgarh

	Grades				
Cohort	*I*	*II*	*III*	*IV*	*V*
1992-93	27515	25383	24640	23700	15583
1993-94	30851	26845	24960	23405	20076
Grade Ratio	—	98%	98%	95%	85%

Source DPEP Annual Plans of District

Methodology and Assumptions

As mentioned, over a period of time number of assumptions are required

to make on the following indicators which are briefly discussed below

(a) Entry Rate (Apparent)

(b) Promotion Rates (Grade Ratios)

(c) Drop-out Rates

Entry/Intake Rate

One of the important indicators which plays a significant role in enrolment projections and which forms the basis of future enrolment in Grades II to VIII in subsequent years is entry rate which is also known as intake rate While computing the rate, only present members of cohort (new entrants in Grade I) are considered and repeaters are just ignored as they are the members of some other cohort. A cohort is simply a group of elements (children) moving together from one grade to another and from one time period to another. If the age distribution of children are available and repeaters are also considered, it is known as Net Entry Rate Calculation of this rate without considering repeaters is known as Gross Entry Rate Since in most of the DPEP districts, repeaters and age-grade matrix is not available, in the present article, simply Gross Entry Rate has been used to project gradewise enrolments. Still this rate is very important and has a significant role in order to know status of a district with respect to other districts of the state and can also be computed separately for boys and girls, rural and urban areas and Scheduled Castes and Scheduled Tribes children and can be used to identify educationally backward blocks/districts so that specific strategies are formed so as to achieve the goals of UPE

Gross Entry Rate (Grade I) has been computed by using the following formula (see Exhibit II, Column 3)

$$\text{Gross Entry Rate} = \frac{\text{Enrolment in Grade "I"}}{\text{Population of Age "6"}} \times 100$$

In the absence of data on repeaters, no assumptions are required on future drop-out and repetition rates in different years. Gross Entry Rate has been assumed to be 120 per cent in the target year 2000-01 assuming that estimate of overage and underage children to be 20 per cent in Grade I For remaining years, it has been simply increased to 1.29 percentage points i.e. (120-111)/7 every year, which is illustrative in nature and will be different for different districts Thus, based on the existing level of gross entry rate and estimate of overage and underage children in Grade I, each district require to fix its own target of entry rate for year 2000-01. Since in most of the districts, estimates of overage and underage children at the Primary level are not available, a survey

Exhibit II- Enrolment Projection
District Rajgarh

Year	Single Age Pop. '6'	Gross Entry Rate (%)	Enrolment					Total Grade I-V	Population 6-10 years	GER (%)
			I	II	III	IV	V			
1992-93	27200	101	27515	25383	24640	23700	15593	116827	127300	91 77
			0 98	0.98	0 95	0 85				
1993-94	27800	111	30851	28645	29960	23405	20076	126137	129900	97.06
			0 98	0 98	0 95	0 86				
1994-95	28400	112	31808	30234	26308	23712	20128	132190	132600	99 69
			0 98	0 98	0.95	0.88				
1995-96	28900	114	32946	31172	29629	24993	20866	139606	135000	103 41
			0 99	0 99	0 96	0 90				
1996-97	29400	115	33810	32617	30860	28444	22493	148224	137400	107 88
			0 99	0 99	0 97	0.92				
1997-98	29900	116	34684	33472	32290	29934	26169	156549	139900	111 9
			1 00	1 00	0 99	0 97				
1998-99	30500	117	35685	34684	33472	31645	28438	163924	142400	115.12
			1 00	1 00	0 99	0 97				
1999-2000	31000	119	36890	35684	34684	33137	30695	171091	144900	118 08
			1 00	1 00	1 00	1 00				
2000-01	31500	120	37800	36890	35685	34684	33137	178196	147300	120 97

Note Each DPEP district will set their target of Gross Entry Rate and Grade Ratios based on the past trend in the District This would be in accordance with the targetted Gross Enrolment Ratio

at local level needs to be undertaken to obtain information on grossness (Mehta 1994). If number of repeaters in a district is also available, calculation procedure of entry rate would be slightly different In that case a column having title 'New Entrants' is required to be added just after the single age population (Exhibit II, Column 2) Better if more than two years enrolment data are used so that turned in entry rate can be captured Based on the targetted Gross Enrolment Ratio (GER) at Primary level, the targetted entry rate in year 1994-95 will be set along with the grade ratios in different grades. Here, entry rate plays an important role because achievement of target mainly depends upon the number of children proposed to be brought in Grade I, hence needs special attention and shall be fixed in accordance with the total enrolment in Grades I-V in year 1994-95 and targetted grade ratios.

Grade Ratios

Further it has been assumed that grade ratios in different grades in target year 2000-01 would be 1 00 or 100 per cent, which means no detention policy in Primary grades to be strictly followed In the absence of 'no detention policy', grade ratios in target year are required to be modified In the remaining years they are increased accordingly Better, if past grade ratios are observed and targets are set out

Gross entry rates during the period 1994-95 to 2000-01 are required to be first calculated (Column 3) These targetted entry rates are then applied to population of age '6' to get enrolment in Grade I during the period 1994-95 to 2000-01 (Exhibit II, Column 4). Enrolment in remaining grades are then projected with the help of targetted grade ratios by simply taking percentages to previous grade enrolments (Columns 4 to 8). Enrolments in different grades are then added together to get aggregate enrolment in Grades I-V (Column 9). In the next column, projected population in the age group 6-10 years has been presented which is followed by Column 11 where Gross Enrolment Ratio (projected) has been presented. Now these enrolment ratios need to be compared with those of targetted enrolment ratios. In case of a significant deviation, apparent entry rates and grade ratios in different years are required to be modified and the exercise needs to be repeated (for details see Mehta, 1992 and 1994).

The enrolment projection exercise presented in the present article can also be undertaken by applying a computer model (see Mehta, 1992) The use of the computer model is simple and district level officials can easily handle their enrolment projection exercises along with computation of a number of other indicators needed for diagnosing a block(s) or district Also, if a number of enrolment projection exercises are to be undertaken, i e. for each block

separately for boys and girls, rural and urban areas etc , the computer model may facilitate the work of district level functionaries. The projected enrolment in different districts, if added together, will produce projections at the state level and would be more reliable than any independent projections undertaken at the state level

Retention Rates

Based on the projected enrolments in Grades I and V, retention rates (Exhibit III) have been calculated Since repeaters have not been considered in the present exercise, gradewise repetition rates are not possible to compute. Those who will not reach to next grade are considered drop-outs. The projected retention rates in different years should be compared with those of the targetted

Exhibit III . Retention Rates
Rajgarh District . Primary Level (Total)

(Figures in Hundred)

Year	Grade I Enrolment		Corresponding Grade V Enrolment	Projected Retention Rate (%)
1994-95	—	(1990-91)	20128	—
1995-96	—	(1991-92)	20866	—
1996-97	27515	(1992-93)	22493	81 75
1997-98	30851	(1993-94)	26169	84 82
1998-99	31808	(1994-95)	28438	89 41
1999-2000	32946	(1995-96)	30695	96 08
2000-01	33810	(1996-97)	33137	98 01

Note. (i) Retention Rates have been calculated on the basis of enrolment projections presented in Exhibit II.

(ii) Retention Rates for years 1994-95 and 1995-96 may be calculated on the basis of Grade I enrolment in years prior to 1992-93

retention rates In case of significant deviation, assumptions on entry rate and grade ratios in different years are to be modified and whole exercise needs to be repeated. The exercise is supposed to be undertaken each year with regard to actual achievements and in the light of that, targets may also have to be revised. Additional numbers of children are now required to calculate during the project period Provision of incentives, textbooks, additional teachers and other schemes in the project may be proposed on the basis of projected figures To capture the effect of population growth on enrolment and retention and number of beneficiaries, the exercise may be repeated by taking alternative sets of projected population of age '6' and 6-10 years Also, the exercise should be

repeated to girls and other disadvantaged groups as per the details given in the DPEP guidelines and should be undertaken at the block level

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Styles of Education-Development Interface in North-Eastern Tribal Region

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Abstract

The study tried to examine the dynamics of bidirectional causal relationship between advancement of education at various levels and different dimensions/ perspectives of development in the setting of a tribal region of North-Eastern India. Efforts have been made to identify how a particular style of development has contributed to advancement of education at various levels and conversely how a particular level of education has accelerated various dimensions of development either individually or in combination. In order to realise such objective the study tried to identify/formulate indicators and composite indicators related to representative dimensions of development and attributes related to advancement of education at various levels and examined linear relationship between them.

While searching the roots of development in various societies the researchers have felt the presence of 'education' as a major factor being both cause and consequence of development. Continuous debate, divergent opinions and multiplicity of research findings continue to confuse various issues related to education-development linkage since long. Most of the research studies have examined only one-way relationship between education and development and that too basically with economic dimension of development instead of with various representative dimensions of development or their

combinations Little effort has been made to examine how various sub-systems of wider development system have contributed to the educational advancement of a country/region Various dimensions/perspectives of development do not move simultaneously with identical force A combination of some dimensions of development rerpresenting a particular style of development may act as a catalytic agent of educational advancement at a particular level or levels of education in order to get higher level of reinforcement in the process of development itself Again advancement of education has accelerated some dimensions of development keeping some other dimensions untouched Advancement at all levels of education do not contribute to development uniformly in all societies Further, though any individual dimension of development may not influence the advancement of education at a particular level but some dimensions in combination may influence the advancement of education due to horizontal interaction effect and combination effect.

Review of Studies

Studies related to education-development interface categorised as social demand approach, the correlation approach (Svennilson et al , 1961, Williamson, 1977; Usha Rao, 1982, Azad, 1985, Mehta,1988, Zaide, 1988, Veena, 1987 and S Devi, 1990), residual approach (Solow, 1957, Kendrick 1961; Denison, 1962, Scultz,1967, 1979, Bowen, 1980) input out-put approach (Correa and Tinbergen, 1962, Tinbergen and Bos, 1965), manpower requirement approach (Harbinson and Mayers, 1964; Jain Srivastava and Bolar, 1975; Panchamukhi, 1975, 1978), rate of return approach (Weisbrod, 1964, Scultz, 1962; Psacharopoulous 1973 and 1981; Atkinson, 1983) and production function approach (Choudhury, 1979) have highlighted how education has influenced economic dimension of development and some studies incidentally or indirectly have highlighted the social dimension in addition Raza *et al* (1986) tried to highlight the social, cultural, economic and intergenerational dimensions of education, while studying the impact of educational levels on some dimensions of development

The Setting

The present study was designed to examine the bidirectional interface relationship between education and development in the setting of a tribal region of north-eastern India. The north-eastern tribal region composed of states of Meghalaya, Mizoram, Arunachal Pradesh and Nagaland has a distinctive regional personality of its own, since these are the only states in India which are basically inhabited by the tribals

On the basis of magnitude of relationship between the levels of educational advancement and levels of development of north-eastern tribal states and magnitude of 'Distance' (i e. Discriminant Efficiency) in the level of total development between the alternative rotated combination of states, north-eastern tribal region was treated as a single region for identification of the interface relationship between educational advancement and development All the four tribal states were found to be highly correlated regions and thereby have experienced more or less uniform pattern of educational advancement as well as level of development both at prior and later time point on 18 development indicators and 24 indicators of educational advancement related to various levels of education and also a significant upward mobility in the level of uniformity (Table 1).

TABLE 1

Intercorrelation between the Levels of Educational Advancement and Levels of Development of the States of North-Eastern Tribal Region at Prior and Leter Time Point

		Levels of Educational Advancement		Levels of Development	
		At Prior Time Point	At Later Time Point	At Prior Time Point	At Later Time Point
1	Between A Pradesh and Meghalaya	694*	.983*	602*	943*
2	Between A Pradesh and Nagaland	748*	.901*	879*	980*
3	Between A. Pradesh and Mizoram	764*	612*	720*	973*
4	Between Meghalaya and Nagaland	894*	945*	646*	977*
5	Between Meghalaya and Mizoram	670*	.689*	957*	936*
6	Between Nagaland and Mizoram	763*	775*	.755*	972*

*Significant at 0 01 level

Magnitude of 'Distance' (i e. Discriminant Efficiency) in the level of total development (level of educational advancement + level of development jointly) between alternative rotated combination of states on 18 development indicators and 18 indicators of educational advancement related to various lavels of education both at prior and later time point were also found to be bit significant At later time point distance at the level of total development were found to have considerably narrowed down (Table 2)

TABLE 2

Distance in the Level of Development (i e. Discriminant Efficiency) between Alternative Rotated Combination of Tribal States at Prior and Later Time Point

Sl No	Alternative rotated combination of Tribal States	Distance D(A, B)**2		F Value F Value	
		Prior Time Point	Later Time Point	Prior Time Point	Later Time Point
1	Between A Pradesh and Meghalaya	789	262	483	160
2.	Between Meghalaya and Nagaland	548	188	335	012
3	Between A Pradesh and Mizoram	226	132	1 383	810
4	Between A Pradesh and Nagaland	354	140	022	086
5	Between Meghalaya and Mizoram	378	134	231	823
6	Between Nagaland and Mizoram	603	128	369	783

Development dynamics of north-eastern tribal region was conceived in terms of following disaggregated dimensions

1 Development of socio-economic base
2. Structural change in economy
3. Infrastructural development
4 Socio-cultural development
5 Technological development
6. Economic development

From the point of view of development style it was conceived that first four dimensions of development may move simultaneously or in combination and the style was conceived as 'Basic Dimensional Development' Again, it was also visualised that at a particular time point six dimensions of development may move simultaneously or in combination and the style was conceived as "Sustainable Development".

Similarly, the level of advancement of education of north-eastern tribal region of India was conceived from the point of view of following disaggregated levels of education

1. Advancement of education at literacy level
2 Advancement of education at primary schoolJevel
3. Advancement of education at upper primary school level
4. Advancement of education at secondary school level

5. Advancement of education at vocational/technical school education level
6 Advancement of education at general higher education level

Advancement of education at first four levels in combination represent "Advancement of Education at General School Education Level" Again, advancement of education at all the six levels in combination represent "Advancement in Total Education System".

Hypotheses

In order to test the bidirectional causal relationship between education and development the following null hypotheses were tested

There is no linear relationship between the scores of composite indicators of.

1. Advancement of education at literacy level (DV) and first four dimensions of development in combination (IV)
2. Advancement of education at primary school level (DV) and first four dimensions of development in combination (IV)
3 Advancement of education at upper primary school level (DV) and first four dimensions of development in combination (IV)
4 Advancement of education at secondary school level (DV) and first four dimensions of develoment in combination (IV)
5. Advancement of education at vocational/technical school education level (DV) and first four dimensions of development combination (IV)
6 Advancement of education at general higher education level (DV) and first four dimensions of development in combination (IV)
7 Advancement of education at literacy level (DV) and six dimensions of development in combination (IV)
8 Advancement of education at primary school level (DV) and composite indicators of six dimensions of development in combination (IV)
9 Advancement of education at upper primary school level (DV) and six dimensions of development in combination (IV)
10 Advancement of education at secondary school level (DV) and six demensions of development in combination (IV)
11 Advancement of education at vocational/technical school education level (DV) and six dimensions of development in combination (IV)
12 Advancement of education at general higher education level (DV) and six dimensions of development in combination (IV)

13. Development of socio-economic base (DV) and first four levels of educational advancement in combination (IV)
14 Structural change in economy (DV) and first four levels of educational advancement in combination (IV)
15. Infrastructural development (DV) and first four levels of educational advancement in combination (IV)
16 Socio-cultural development (DV) and first four levels of educational advancement in combination (IV)
17. Techonological development in (DV) and first four levels of educational advancement in combination (IV)
18. Economic development (DV) and first four levels of educational advancement in combination (IV)
19 Development of socio-economic base (DV) and the educational advancement at six levels in combination (IV)
20. Development of structural change in economy (DV) and educational advancement at six levels in combination (IV)
21 Infrastructural development (DV) and educational advancement at six levels in combination (IV)
22 Socio-cultural development (DV) and educational advancement at six levels in combination (IV)
23. Technological development (DV) and the educational advancement at six levels in combination (IV)
24 Economic development (DV) and educational advancement at six levels in combination (IV)

METHODOLOGY

Data Base: The data related to development indicators and indicators of educational advancement were collected from secondary sources such as All India Educational Survey Reports, Statistical Abstracts of India, Census Reports, Statistical Hand Books, Statistical Records publishsed by NCERT, CSO, MHRD, Government of India, Directorate of Economics, Statistics and Evaluation of Government of Meghalaya, Government of Nagaland, Government of Arunachal Pradesh, Government of Mizoram, North-Eastern Council, Shillong and other agencies published from time to time. The data were related to the period 1971/1972-73 (Prior time point) and 1981/1985-86 (Later time point) But certain indicators had to be constructed using standard formula due to non-availability of data Further, due to lack of data comparable data indicators for specific states for specific year had to be constructed, since all the states of north-eastern tribal region were not formulated simultaneously.

Dimension-wise classification of Development Indicators

The synoptic details of dimension-wise classification of 18 development indicators selected/formulated follows

1. Development of Socio-economic Base

(i) Dependancy Ratio
(ii) Rate of Urbanisation
(iii) Average Population served per Commercial Bank (No in '000)
(iv) Average Population served per Community Development Block
(v) Average Population served per Hospital bed

2. Structural Change in Economy

(i) Degree of Economic Diversification
(ii) Percentage of Workers to Total Population

3. Infrastructural Development

(i) Percentage of Net Irrigated Area to Net Area Sown
(ii) Road Length per 1000 sq km of Area
(iii) Percentage of Villages Electrified

4. Socio-cultural Development

(i) Rate of Interaction with Non-tribal Societies
(ii) Birth Rate
(iii) Female Work Participation Rate

5. Technological Development

(i) Annual Percapita Consumption of Electricity (KWH)
(ii) Consumption of Plant Nutrients per hectare of Gross Cropped Area

6. Economic Development

(i) Percapita State Domestic Product at Current Prices
(ii) Percapita Foodgrains Production
(iii) Percapita Plan Outlay

Attribute wise Classification of Indicators related to Advancement of Education at Various Levels

Attribute-wise classification of indicators (attributes shown within brackets) related to advancement of education at various levels follows.

1. At Literacy Level

(i) Percentage of Total Literacy (Total Dimension of Literacy)
(ii) Male-female Differential Index of Literacy (Sex differential in Literacy)
(iii) Rural-urban Differential Index of Literacy (Space differential in Literacy)

TABLE 3

Composite Development Indicators for Various States of North-eastern Tribal Region at Two Time Points

Observation	*CDSEB*	*CSC*	*CID*	*CSCD*	*CTD*	*CED*
Arunachal Pradesh at prior time point	0 46	1 13	0 58	0 98	0 23	0 58
Arunachal Pradesh at later time point	0 45	0 98	0 70	1 00	0 31	0 89
Meghalaya at prior time point	0 87	0 83	0 97	0 89	1 42	0 57
Meghalaya at later time point	0 90	0.85	0 88	0 84	1 71	0 48
Nagaland at prior time point	0 56	0 92	1 86	0 62	0.99	0.75
Nagaland at later time point	0 68	0 91	1 39	0 67	0 59	0 76
Mizoram at prior time point	0 73	0 75	0 31	0 48	0 26	0 75
Mizoram at later time point	0.75	0.87	0 52	0 46	0 26	0.51

CDSEB Composite Indicator of Development of Socio-Economic Base
CSC Composite Indicator of Structural Change in Economy
CID Composite Indicator of Infrastructural Development
CSCD Composite Indicator of Socio-Cultural Development
CTD Composite Indicator of Technological Development
CED Composite Indicator of Economic Development

2. At Primary School Level

(i) Percentage of Habitations served by Primary Schools Distance (Accessibility)
(ii) Average Number of Primary Schools per Lakh of Po ability)
(iii) Gross Enrolment Ratio at Primary School Level (Qu
(iv) Percentage of Trained Teachers at Primary School L
(v) Percentage of Girls Enrolment to Total Enrolment at Level (Equity)
(vi) Retention Rate at Primary School Level (Interconne

3. At Upper Primary School Level

(i) P C of Habitations served by Upper Primary Scho (Availability)
(ii) Average Number of Upper Primary Schools per lak (Availability)
(iii) Gross Enrolment Ratio at Upper Primary School Le
(iv) Percentage of Trained Teachers at Upper Primar (Quality)
(v) Percentage of Girls Enrolment to Total Enrolment at School Level (Equity)

4. At Seconday School Level

(i) Average Number of Secondary Schools per lakh of Pc ability)
(ii) Gross Enrolment Ratio at Secondary School Level (
(iii) Percentage of Trained Teachers at Secondary Schoo
(iv) Percentage of Girls Enrolment to Total Enrolment at S Level (Equity)
(v) Percentage of Budgeted Expenditure incurred on Sec (Level of Investment)

5 At Vocational/Technical School Education Level

(i) Coefficient of Equality of Scheduled Tribe at Voc School Education Level (Equity)
(ii) Percentage of Budgeted Expenditure incurred on Voc investment)

6. At Higher Education Level

(i) Index of Enrolment Growth in Institutions of General Higher Education Level (Base 1971-72=100) (Quantity)

(ii) Percentage of Budgetary Expenditure incurred on General Higher Education (Level of Investment)

(iii) Coefficient of Equality of S T. at Higher Education Level (Equity)

Two-point observation scores on a particular variable related to various states of north-eastern tribal region were made scale-free by dividing them by their respective means

While constructing group indices highlighting various aspects/characteristics/attributes/dimensions of development or levels of educational advancement the problem of multicollinearity or singularity was taken into account The component loading or the factor loading of differernt variables included in a group on first principal axis factor has been used as weight for the purpose of obtaining a composite group index of either development or of educational advancement

TABLE 4

Composite Indicators of Educational Advancement at various Levels in Different States of North-eastern Tribal Region at Two-time Points

Observation	*CALL*	*CAEPL*	*CAEUPL*	*CAESL*	*CAEVL*	*CAHEI*
Arunachal Pradesh at prior time point	0 45	0 43	0 40	0 16	0 74	0 39
Arunachal Pradesh at later time point	0 58	0 62	0 59	0 39	0 85	0,50
Meghalaya at prior time point	0,96	0 69	0 61	0 85	0 69	0 75
Meghalaya at later time point	0 87	0 67	0 77	0 89	0 64	0 98
Nagaland at prior time point	0,89	0 67	0 88	0 72	0 92	0 57
Nagaland at later time point	1 05	0 66	0 68	0 58	0 79	0 57
Mizoram at prior time point	1 66	0 90	1 19	1 21	0 60	0 42
Mizoram at later time point	1 44	0 74	1 04	1 09	0 67	0 57

CALL	Composite Indicator of Advancement of Education at Literacy Level
CAEPL	Composite Indicator of Advancement of Education at Primary School Level
CAEUPL	Composite Indicator of Advancement of Education at Upper Primary School Level
CAESL	Composite Indicator of Advancement of Education at Secondary School Level
CAEVL	Composite Indicator of Advancement of Education at Vocational/Technical School Education level
CAHEL	Composite Indicator of Advancement of Education at Higher Education Level

Weighted Composite Group Indices have been formulated by a weighted linear combination of scale-free values of observations taken at two-time points related to indicators concerning four tribal states separately and the total has been divided by the number of indicators The following formula was used in the formulation of Weighted Composite Group Index

$$LDR = \frac{P \sum T_1 \times W_1 + T_2 \times W_2 + T_3 \times W_3 \ldots \ Tn\ Wn}{N}$$

Where,

LDR = Level of development of the region
T_1 = Transformed scale-free scores of the variables of the region
W_1 = Weight assigned to the variable of the region
N = Number of variables
P = Sum of the product

Reciprocal causal relationships between various dimensions/perspectives of development and their combination and advancement of education at various levels and their combinations were examined by multiple regression analysis. Analysis of variance was undertaken to test the significance of multiple R and R_2. F-distribution/F-test was employed to test various null hypotheses since F-ratio tests the significance of multiple r and also r^2 Again, T distribution/student T test was used in order to test the significance of individual regression coefficient in order to identify how much of variability of r^2 has been contributed uniquely by each independent variable.

Analysis of Results and Discussion

Levels of first four dimensions of development in combination (i e, basic dimensional development) though found to be significantly correlated to advancement of education at various levels, a highly significant linear realtionship between the former and the advancement of education at the levels of literacy and primary school education (F ratio being 45 164 and 3422, respectively, both significant at 0 01 level vide Table 5) and a significant linear relationship between the former and the levels of upper primary school education and secondary school education (F ratio being 12.518 and 19 835, both significant

at 0.05 level (vide Table 5) were found. This highlights that first four dimensions of development in combination have generated higher social urge and motivation for expansion of literacy base and higher social demand for primary education through allocation of higher resources reinforced by operation of 'demonstration effect' and efforts of missionary activities in the region. Higher level of literacy supported by advancement in primary education was instrumental in making people conscious about poor quantum of basic dimensional development, high dependancy ratio, unemployment and poverty which had contributed to the demand for separate political identity based on ethnicity resulting in emergency of small, tribal states in north-eastern region. This also reflects that basic dimensional development has continued to generate higher social demand by allocating further resources for upper primary education as a part of the national priority programme of universalisation of elementary education. The result further reveals that basic dimensional development has generated

TABLE 5

Pattern of Linear Relationships identified through Testing of Hypotheses

Hypothesis No	Pattern in Linear Relationships			
	R	R^2	F Ratio	F Test
1	0.9918 *R=0.9808	0.9837	15.164	**
2	0.9998 *R=0.9997	0.9998	4422.110	**
3	0.9713 *R=0.9317	0.9435	12.518	*
4	0.9816 *R=0.9565	0.9636	19.835	
5	0.6926 *R=0.4625	0.4625	0.697	
6	0.8679 *R=0.6512	0.7532	2.228	
7	0.9983 *R=0.9881	0.9966	49.147	
8	0.9999 *R=0.9997	0.9999	1891.941	
9	0.9977 *R=0.9839	0.9954	36.303	
10	0.9982 *R=9875	0.9964	46.734	
11	0.9821 *R=0.8669	0.9645	4.528	
12	0.9749 *R=0.7009	0.9486	3.073	

Hypothesis No	Pattern in Linear Relationships R	R^2	F Ratio	F Test
13	0 9575 *R=0 8972	0 9164	8 222	
14	0 9916 *R	0 9833	44 194	**
15	0 3449 *R=1 02	0 1190	0 101	
16	0 9683 *R=0 9242	0 9375	11 255	*
17	0 8810 *R=0 6911	0 7761	2 600	
18	0 9832 *R=0 9604	0 9667	21 771	
19	0 9953 *R=0 9669	0.9907	17 750	
20	0 9976 *R=0 9829	0 9952	34 268	
21	0.8678 *R=0 8533	0 7531	0 508	
22	0 9977 *R=0 9837	0 9954	35 898	
23	0 9477 *R=0 5359	0 8982	1 470	
24	0 9991 *R=0 9936	0.9982	91 873	

* Significant at 0 05 level
** Significant at 0 01 level

significant social demand for secondary education as well though the magnitude of social demand generated was found to be much less in comparison to the social demand generated for primary education and upper primary education Out of four dimensions of development, socio-cultural development and infrastructural development independently were found to have contributed highly significantly and significantly, respectively (T values being 6 621 and 3 257 significant at 0 01 level and 0.05 level (Table 6) towards advancement of education at literacy level Structural change in economy, development of socio-economic base, socio-cultural development and infrastructural development — all the four dimensions of development independently have contributed highly significantly towards advancement of primary education in the region (T values being 26 742, 65 209, 13.785 and 16 571 all significant at 0.01 level (Table 6). Further, out of four dimensions of development only socio-cultural development was found to have contributed significantly towards

advancement of education at upper primary school level (T value being 3 495 significant at 0 05 level (Table 6) However, no linear relationship was found between the levels of first four dimensions of development in combination and

TABLE 6

Test of Significance of Regression Coefficients of Significant Individual Component of Independent Variables related to Different Hypotheses

Hypothesis No	Significant individual Component of Independent Variables	Dependent Variable	T-Value	T-Test
1	Infrastructural Development	Advancement of Education at Literacy level	3 257	*
1	Socio cultural Development	"	6 621	**
2,	Development of Socio-Economic Base	Adv of Education at Primary School level	26 742	
2,	Structural Change in Economy	"	65 209	**
2	Infrastructural Development	"	13 785	**
2	Socio cultural Development	"	16 571	**
3	Socio cultural Development	Adv of Education at Upper Primary level	3 495	*
8	Structural Change in Economy	Adv of Education at Primary School level	13 341	*
13	Adv of Education at Secondary School level	Development of Socio-economic Base	4 2595	*
14,	Adv of Education at Primary School level	Structural Change in economy	4 3299	*
14	Adv of Education at Secondary School level	"	3 4502	*
18	Adv of Education at Primary School level	Economic Development	7 2197	**
18,	Adv of Education at Secondary School level	"	8 1301	**
24	Adv of Education at Primary School level	"	15 431	**

* Significant at 0 05 level
** Significant at 0 01 level

advancement of education either at vocational/technical school education level or at general higher education level even if the former was found to be significantly correlated to both the levels of education This indicate that the style of basic dimensional development could not generate adequate social demand for vocational/technical school education and higher education in the region. This highlights that a threshold level of development is prerequisite for creation of jobs for absorbing vocational school learners and products of general higher education in various occupations.

The results indirectly supports the empirical findings of Psacharopoulous (1973, 1981, 1995) that rate of return of primary education was the highest in all countries, the observation of Atkinson (1983) that there is a tendency of rate of return to fall as the level of schooling rises, the observation of Foster (1987) that ' in the initial stage technical or vocational education is the cart rather than the horse in economic growth and its development depends upon real and perceived opportunities in the economy' and the comments of Psacharopoulous and Loxley (1985) that 'Paradoxically it may seem that lower the over all level of development weaker the case for introducing a diversified curriculum'.

The levels of six dimensions of development in combination (i e, level of sustainable development) though was found to be significantly correlated to the advancement of education at all levels, a significant linear relationship was again found between the former and advancement in the level of primary education alone (F ratio being1891. 941 significant at 0.05 level)

Advancement of education at first four levels in combination (i e advancement in the level of general school education) was not only found to be significantly correlated to various dimensions of development, a highly significant linear relationship between the former and structural change of economy (F ratio being 44 144 significant at 0 01 level) and significant relationship between the former and socio-cultural development and economic development (F ratio being 11.255 significant at 0 05 level and 21.771 significant at 0.05 level, respectively vide Table 6) were found This indicates that general school education had contributed highly significantly to structural change in economy and significantly to socio-cultural and economic development of the region

Again, no linear relationship was found between advancement of education at six levels in combination (i e advancement in the level of total education system) and development dimensions at disaggregated level, even if they were found to be significantly correlated. This indicates that in spite of significant association between them no causal relationship could be identified.

CONCLUSION

There is a need for formulation of uniform strategy for educational advancement at various levels as well as for development options in various disaggregated dimensions in north-eastern tribal region. Educational system requires to be integrated to various styles of development. Topmost priority should be given to advancement of elementary education in the region followed by functional literacy at present. Structural change in economy would not only reinforce development in other interrelated dimensions of development, it will also act as catalytic agent in advancement of education at various levels specially at elementay school level Structural change in economy should be supplemented by socio-cultural development in order to achieve the goal of basic dimensional development. Development of general school education should get priority over vocational/technical school education at present. Non-interface between vocational/technical school education/general higher education and various dimensions and styles of development suggest that vocational/technical school education and higher education should get limited importance due to their questionable relevance to the present stage of development of the region. But it is more likely that along with structural change in economy, infrastructural development, technological development and economic development higher social demand for vocational/technical school education and higher education will emerge over years

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Distance Education and Learner's Motivation: A Need for Integration with Freirean Pedagogy

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ABSTRACT

This paper examines the efficacy of distance education in relation to the ever increasing illiteracy and problem of mass education around the world, especially in the Third World countries The concern today is to take education to the doors of remote populations with limited and depleting resources It is felt that the system of distance education has a potential to meet this social need at a cheaper cost than the conventional classroom education. However, some method has to be introduced in the system to enhance the learner's motivation and interest for sustained education An attempt has been made here to integrate distance education with Freire's critical pedagogy for achieving such an improvement

GROWING population, illiteracy, lack of resources and technological challenges are hard realities of the human situation in many parts of the world By the turn of the century, the world population will be 6 2 billion and by the year AD 2050, it is projected to be 10 billion Three-fourths of this population will be living in the developing nations of Asia, Africa and Latin America (UNESCO, 1993, Zsigmond and Devereaux, 1980). Despite the rate at which education is expanding in the developing countries, the rate of illiteracy stands to increase Economic realities suggest that in future govern-

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ments will be unwilling to increase their contribution towards education The burden that schools are already facing for solving society's problems of illiteracy, drop-outs and retraining will be heavier in the future (Stevens, 1993).

It has been realized that the fiscal burden of conventional classroom education is too heavy to meet the educational needs of all Distance education seems to be a cheaper alternative to conventional classroom teaching (Keegan, 1990).

The concept of distance education has caught the attention of educational planners all over the world (Rumble and Harry, 1982). It is believed that distance education has the potential to bring the benefits of education to the doorsteps of millions of people from rural to urban, from young to old, from rich to poor, where perhaps other delivery systems cannot (Garrison, 1989)

Distance education is a formal approach to learning in which the instruction occurs while the educator and the learner are at a distance from one another throughout the length of the learning process. An essential feature of distance education is that the teaching acts are separated in time and place from the learning acts and the interpersonal communication of conventional education is replaced by technical media print, audio, video and computer (Keegan, 1986 and 1990) A major concern is to develop ways, such as distance education, to educate large numbers of hard-to-reach individuals without reducing the content of the subject-matter Many educators tend to emphasize that to meet such requirements, it is necessary that the facts relating to inadequacies and limitations of distance education be also kept in view

Most reports confirm that distance education is cost effective (Garrison, 1989) It has a wide reach and is a liberal and individualized form of instruction It provides freedom to the learner to proceed at his/her own pace. It promotes social uniformity and supports national economies by taking education to the doorsteps of the learners' workplace. However, some questions remain How effective and efficient is the system? How are the questions of individual needs and motivation tackled?

Sewart (1981) argues that there are many teaching points and skills which cannot be successfully dealt by study materials alone No matter how perfect the instructional package may be, it cannot do the whole job of instruction Motivation among learners is a major factor in determining the success of any distance education programme Motivation is a complex issue, and is a cyclic, not a unidirectional process Motivation influences learning and is in turn influenced by high performance (Dewal, 1988). Coltman (1983) states that there are difficult periods of motivation in the life of the distance learner and proper counselling at the proper time is of immense help to students.

According to Daniel and Marquis (1979), the way to achieve maximum

benefit lies in the "right mixture" of interaction and independence In developed countries telephone tutoring, teleconferencing and computer-conferencing are some of the common modes of attending to individual needs. In developing countries the chief way of attending to individual needs is personal contact programmes. Tutorial sessions are planned specially for individual tutoring and for building up an interpersonal rapport.

The consensus appears to be for increasing the overall effectiveness of distance education through human interaction and interpersonal exchanges between the teacher and the learner. For this purpose, the critical pedagogy of Paulo Freire, the Brazilian educator who empowered his students to lead successful voting-right movements, has been drawn upon. Freire's critical pedagogy implies the idea of fostering student initiative and creativity through non-authoritarian dialogue between student and teacher The teacher is portrayed as a transformative intellectual, who educates with a bias towards freedom, justice and equality (Giroux, 1988) Critical pedagogy is synonymously referred to as critical theory, or the new sociology of education (Evans and Nation, 1989).

Dialogue is cental to Freire's pedagogy The learner enters into the process of learning not by acquiring facts but by constructing their reality through social exchange with others (Freire, 1970) In line with Freire's position, White (1982) is of the view that since distance education tends to reach a large number of students simultaneously, it is most effective when it builds on the current social and cultural trends and encourages students to become active in local development

An attempt is made in this paper to reivew and examine distance education as a cost effective alternative system for mass education, linking the discussion with Paulo Freire's concept of "critical pedagogy" as applied to the effectiveness and efficiency of distance education with respect to learners' motivation

Distance Education

Concept

Distance education refers to education at a distance with separation of teacher and student, or according to Holmberg (1977, p 9), it is a form of study which is not under the continuous and immediate supervision of a teacher

In distance education, communication occurs non-contiguously or intermittently through specially prepared teaching materials transmitted to individuals The learner's progress is monitored through written or taped exercises. These are completed by the learner and sent to the teaching agency, usually comprising a group of teachers, who examine, grade, and correct the materials

and subsequently return them to the learner with their criticism and advice for future improvement (UNESCO, 1979; Garrison and Shale, 1987; Keegan, 1990).

Distance education provides the learner with freedom of choice and options regarding what to study, where to study, and when to study. There is often no set restriction of age and prior educational qualification for the learner The system offers an opportunity for a life-long continuing education to an individual It also provides a second chance for adults previously denied entry into higher education

Limitations of Distance Education

The theories of distance education emphasize the learners autonomy and independence (Wedemeyer, 1963, Delling, 1968, Moore, 1977), as well as media interaction and communication (Daniel, 1979, Smith, 1979; Sewart, 1980; Holmberg, 1981) These theories provide a guideline for achieving the functional objectives of distance education The system of distance education places emphasis on a kind of education which has the disadvantage of spatial separation between the educator and the learner In this system, the individuals study independently and do not receive immediate feedback, as one gets from his/her teacher in the conventional system of classroom education.

Freire (1985) refers to the present day conventional as well as distance education systems by the metaphor of "banking" in which students are regarded as empty-being who are filled with "deposits" of knowledge from the all-knowing teacher (see Fig.1). In this approach the students are passive receivers, who do not question the happenings around them, and their critical power may remain underdeveloped. Freire offers a solution for this through "Critical Reflection" "Critical Reflection" is a consciousness raising practice intended to combine critical awareness, acquisition of literacy and other basic skills to foster reciprocal relationships between the participant and the social reality (Gottlieb and La Bella, 1990) Through "Critical Reflection" learners can have a say in the curriculum and the media selection (see Fig 2) For example, a course designed by educators is delivered in the classroom or sent to distantly located students for their learning. They read it, assimilate the facts and reproduce the same in their examinations This is an example of the "banking" system. However, if the students are able to critically evaluate the course, and give their opinion on its structure, then it will be an example of Freire's critical reflection method In this process there is a negotiation that goes on with regard to the meaning of what is being taught Such negotiation allows for mention/ attention to critical issues of the qualitative aspects of education

It is seen that the more one is steeped in the "banking" (knowledge without

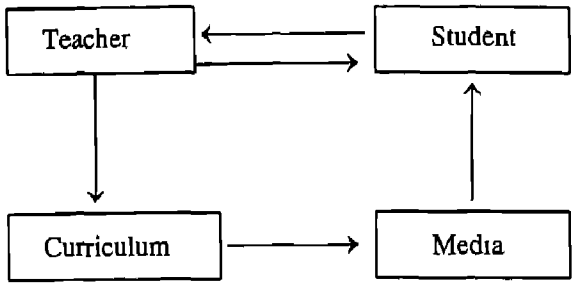


FIG. 1 Banking Model

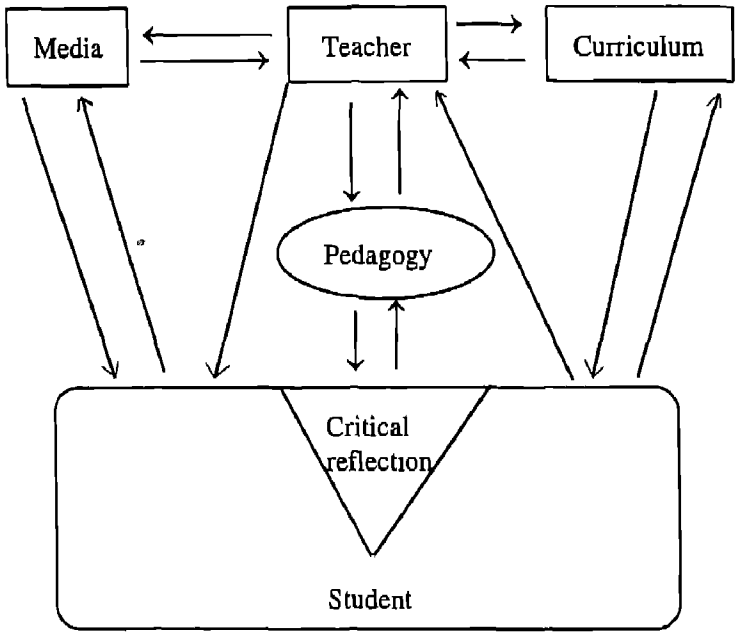


FIG 2 Freire's Critical Pedagogy

reflection) system of education, the less one is able to engage in the processes of critique and reflection (Modra, 1989)

Freirean Pedagogy

Prerequisites

According to Paulo Freire, the function of education is to help usher in a more just and humane society. It must help not only the transference of knowledge to individuals but also the transformation of the individual through knowledge

Freire introduced a new dimension to educational theory and practice. It is new because he links the process of social struggle to the particulars of people's lives He has faith in the power of the oppressed to struggle for their own liberation He thinks that education is central to the transformation of the human mind, it fosters critical thinking, creativity and open mindedness, and provides choices and options in life (Freire, 1985) Similar views have been expressed by Krishnamurti (1974), while addressing a group of students on education

> Educate yourself in the real sense of the word . . bring about a change in your mind which means that you have to be extraordinarily critical . can education see to it that the human mind is not drawn into that vast stream and so destroyed; see that the mind is never sucked into that stream; so that, with such a mind you can be an entirely different human being with a different quality of life (p 14)

Education should be seen as a problem-solver for human beings. However, this can be achieved only when men and women realize their own natural powers and have confidence in their abilities and have the courage to use them. Freire advocates a kind of education which will bring social justice. Shore (1980) argues that to reach this status, one has to read closely, write clearly, think critically, and conceptualize and verbalize social problems in order to penetrate them. Only this type of education will lead people to recreate society with a sense of justice.

Freire argues that the learning situation is more complex than the "banking" analogy implies It should be more like a complex "figure-skating dance," in which both partners (teacher and student) have understanding and mutual trust in participation The optimal result is produced when both parties are given equal importance. However, Freire realizes that this ideal situation may not be easy to bring about, especially with distance education For example, on the one hand teachers may have a problem giving-up their authority, since the "banking" model places the teacher in such a position Once that power relationship is established, students on the other hand may find it very difficult to play any other role than that of passive recipient (Freire, 1985)

Freire favours more freedom for the learning party, so that the students can

Curriculum

Curriculum is an area that holds promise for bridging the gap between "the hope and the happening" (Fitzclarence and Kemmis, 1989, p. 156) The aspects of curriculum (what to teach) along with pedagogy (how to teach), are of much significance in distance education. A curriculum should provide opportunities to students to clarify their personal learning goals and to reflect on issues in a wider frame of social change. A Freirean curriculum may focus on: (a) historical and political circumstances, (b) ideological aspects (social and moral philosophy), (c) epistemological aspects (nature of knowledge), (d) pedagogical action (teaching and learning organization), and (e) critical understanding and action or dialectical conception (Fitzclarence and Kemmis, 1989, p. 156) This curriculum will involve students in making connections between their private sphere, their work and the larger society, and in critically reflecting upon those connections.

The cyclical stages through which critical consciousness develops, can be referred to as naming, reflecting, and acting, as shown by the focus-questions given below (Modra, 1989):

What is going on? — for naming the problem
Why are things this way? — for reflecting on the problem
What can or should be done? — for acting to solve the problem

The following example may help to illustrate the method presented above. Suppose a course on environmental problems has been designed by the teacher and sent to students. The focus of the course is on water, air and land pollution. Now there are two options open to students for using this course. They may either learn only what is presented to them and prepare for the examination, or they may think about topics further to find out whether there are such problems in their vicinity. If there are, then what is the history? What are the sources of pollution in the area? How many pollution sources—cars, trucks and garbage-dumps are there? Are the rivers and other water sources polluted? What is the state of health of trees and humans in the area? With the help of such questions, students will be able to connect what is learned (theory) to what is actually occurring in everyday life (practice)

Once they have learned to examine their own situation factually and critically, the next step is to move them to thinking about solutions. It is at this point that they may need close guidance in thinking radically, for solutions to environmental problems are sure to step on some political (and powerful) toes Again, it is at this point in the critical reasoning process that the isolation of distance education requires intervention Some sort of opportunity needs to be structured for students to share their knowledge and to discuss collectively, their proposed solutions

Furthermore, in order to improve the situation, students may take some positive action, such as campaigning for pollution awareness, approaching local authorities, collecting signatures of fellow citizens, organizing protest marches, etc This example shows how curriculum and critical pedagogy can intertwine to bring about social change.

Pedagogical Suggestions to Enhance Critical Ability

In Freirean pedagogy, emphasis is laid on the development of critical ability among students.To make the students self-reliant and keen observers of their surroundings, it is necessary that a distance teacher provide opportunities to students for improving critical ability In this connection it is suggested that the students maintain a diary, divided into three sections, to keep a record of their readings, observations and reflections

Diary of Critical Reflections

(a) Section of Observations

Critical observation is a prelude to critical thinking and writing This section of the diary will contain a critical account of day-to-day observations of nature, individuals, films, social events, functions, etc The student will write a critique, indicating the social relevance of the observation concerned For example, in a history course, the student might visit local museums and monuments, make observations and write about the visit with personal reflective viewpoints. The purpose is to evaluate the past in light of the present Similarly, observational reflections of other subjects, like geography, politics, education, environment, economics, and sciences, can be noted

(b) *Section of Readings*

This section will contain abstracts and critical reviews of materials, pertaining to subject of study, read by the student. For this, the student will read books, journals and magazines in local libraries, contemplate about the subject-matter, and write about it with his/her impressions This exercise will enhance the power of critical reading and self-reflection For example, in a course of political science, students can develop critical awareness through news items and editorials about local, regional, national, international and global political events

(c) *Section of Correspondence*

There is a need to provide regular feedback, by making up for the absence

of verbal communication in distance education This section would contain records of correspondence between teacher-student, and student-student about learning, problems and activities The student would record actions, reactions, interactions, and responses of each and every inward and outward correspondence. This exercise would sharpen the abilities of critical response and action and the student would develop critical decision-making and communication abilities.

This section may also include records of interviews and conversations with persons related to the subject of study Suppose the student discusses the problem of tax-hike with the Mayor or the M.L A (Member of Legislative Assembly) of the city, he/she will make a critical evaluation of the Mayor/ M L.A 's point of view, and that of the general public

The teacher may specify the section to be emphasized in the diary, considering the scope of subject-matter and availability of time. The diary may be sent once a month to the teacher for his/her critical comments, evaluation and directions for improving the student's critical thinking On completion of the course, the student would write his/her impressions and reactions about the diary-activity This would enable the teacher to assess positive and negative aspects of his/her pedagogical method This project increases student generated input to the course, providing an opportunity for genuine dialogue. It also provides a concrete model that exemplifies Freire's vision of liberating the individual by having him/her participate actively in the broader social process.

The author feels that the activity of the diary maintenance can easily be included into the curriculum of distance education. This activity will help students to relate themselves to the social needs and problems in their immediate environment, which in turn will motivate them towards seeking solutions through continued education

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Importance of Need Fulfilment in Improving Quality of Working Life Perception: A Focus on Special Education Teachers

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ABSTRACT

The present research study aims at finding out the importance of various needs and their fulfilment as relaed to Quality of Working Life (QWL) perception, amongst special education teachers.

The sample comprised of 240 special education teachers from 21 institutions for the visually, mentally and hearing handicapped in New Delhi Two standardised tools — Sashkin and Lengermenn's (1984) QWL F-C schedule and Porters Need Fulfilment (1961) questionnaire were administered individually Product moment correlation and discriminant analysis were used to analyze the data

Results indicated that need fulfilment is positively related to both QWL F-C perception Special education teachers placed more importance on the higher order needs of autonomy, self-esteem and self-actualization Teachers from government and voluntary organisations differed significantly in their perception of QWL-F security need fulfilment, personal growth and the importance given to autonomy and self-actualisation needs. Differences were found amongst teachers working in different institutions for the handicapped, as related to QWL conditions, self-actualisation fulfilment and importance given to the higher order needs.

This has definite implications for human resource development, by planning and incorporating suitable training inputs into future inservice programmes for special education teachers.

QUALITY is the key to productivity and profitability for any type of organisation The drive for total quality begins with the individual. Any organisation's most important resource is its workers The worker is an asset with enormous potential to contribute towards greater productivity and higher profitability What kind of productivity or profitability would depend on the kind of work being done

Today's work force includes all types of workers, each worker being conscious of his/her rights, needs and aspirations being satisfied through the job or work environment Of late, there has been an increasing movement for workers' participation in the management's policy and decision-making process and for democratisation of work organisations as compared to the earlier autocratic bureaucratic set-up. Studies have pointed out that the worker or employee's perception regarding opportunity to participate in decision-making that affects their jobs, free flow and exchange of information, appropriate work amenities including economic compensation, interpersonal relations and support, autonomy on the job and respectful supervisory behaviour are important aspects in work-related satisfaction (Katzzell and Guzzo, 1983; Tannenbaun, 1983; Elden and Taylor, 1983; Veno and Dufty, 1982, Driscoll, 1981; Greenberg and Claser, 1981, Mehta, 1978, and Joseph, 1978, Walton, 1975).

Every worker has a perception of his/her life in context to the work he/she does. The above mentioned are just a few of the important factors contributing towards the Quality of Working Life (QWL) perception of the individual worker in any kind of work set-up.

The phrase 'QWL' quality of working life is a relatively new concept in the behavioural sciences The term was first coined by Davis in 1972 in an International Conference of Arden House, New York, but he gave no specific definition of the term. Initially, it was used mostly in relation to problems of environmental pollution and deterioration of living standards and conditions.

The definition of QWL has progressively undergone changes over time (Nadler and Lawler, 1983) Initially, QWL was viewed as a 'variable' then as an 'approach' and finally as a 'movement' (1975-80) Carlson (1978) viewed QWL as. 'Both a goal and an ongoing process for achieving it ' As a goal it is the commitment of any organisation to work for total improvement As a process it calls for efforts to realise this goal through the active involvement of people throughout the organisation Thus QWL brings together the needs and development of people with goals, and development of the organisation as well. Mill (1978) elaborated upon this further by stressing that QWL

> Aims at a mutuality of interests and returns to both the individual and the organisation

It is a broad and flexible term, catering to the needs and aspirations of the

members of the organisation as related to organisational goals.

Walton (1974) specifically defined QWL as

> The degree to which members of a work organisation, perceived that they are able to satisfy important personal needs through their experience in the organisation

QWL can thus be described and evaluated as the interaction of two factors: (i) those conditions that influence the importance of a particular need of an individual, (ii) those conditions that satisfy or frustrate that need It can be aptly described as "the closeness of the individual-organisational fit". This definition implies that QWL can be assessed by measures of need importance and need satisfaction.

QWL is thus a subjective perception, depending upon the individual worker's structure and importance of need categories. Improved QWL on the whole, improves organisational effectiveness as well as worker need satisfaction and motivation on the job It is thus a two-way process, of value to both the individual worker and the work organisation. Realising the advantage of this type of activity, QWL researches, programmes and Quality Circle Control (QCC) plans of action have been gaining momentum, both in the East and the West in the industrial set-up (Cherns, 1975, Lawler, 1982; Walton, 1975, Barra, 1983) However, what needs to be stressed is that QWL research needs to be done in all areas of work More so in education in India where the emphasis today is on provision of equal educational opportunity and quality education within the framework of 'Education For All' A national commitment such as this necessitates tackling a problem that is largely one of human resource management in the face of limited fiscal and physical resources. Education is a highly human-capital-intensive activity. This becomes all the more crucial in the case of special educators who cater to a select target group—children with special needs and requirements.

This stance has been categorically emphasized in the Fourth Survey of Research in Education that:

> In order to bring research on organisational behaviour in education to a professional level researches have to be initiated in many such crucial issues to bridge existing gaps (p 1061)

Organised research such as this is the first step that will further facilitate understanding various parameters that make an educational system more effective, productive, functional and efficient

The present research aims at assessing the QWL perception, need fulfilment and importance of various needs of teachers in the field of special education. This would help in identifying and planning need-based intervention strategies to improve the QWL of special educators, thereby enhancing the resultant quality of education being imparted by them to the handicapped learner.

OBJECTIVES

1. To assess the QWL perception of special education teachers
2. To assess the level of need fulfilment and importance of various needs amongst special education teachers.
3. To find out whether a relationship exists between need fulfilment importance given to various needs and QWL perception of special education teachers
4. To find out if differences exists in the QWL perception, need fulfilment and importance of various needs amongst special education teachers belonging to government and voluntary organisations for the handicapped.
5. To find out if differences exist in the QWL perception, need fulfilment and importance of various needs amongst teachers working in institutions for the visually, mentally and hearing handicapped.

HYPOTHESES

Three null hypotheses were formulated for the study.

HO_1— There is no significant relationship between need fulfilment and importance of various needs with QWL conditions and feelings perception, amongst special education teachers

HO_2 — There is no significant difference in the QWL perception, need fulfilment and importance of various needs amongst teachers working in government and voluntary organisations for the handicapped

HO_3 — There is no significant difference in the QWL perception, need fulfilment and importance of various needs amongst teachers working in educational institutions for the visually, mentally and hearing handicapped

METHODOLOGY

Population and Sample

The target population for the present study was a small and specific group i e. teachers working in educational institutions for the handicapped in New Delhi. It was therefore decided to adopt a census approach. Each and every teacher from all the institutions for the handicapped were taken in the sample.

The final sample consisted of 240 special educators working in 21 institutions for handicapped learners, covering both government and voluntary organisations for the visually, hearing and mentally handicapped learners.

Instruments Used

Two standardised questionnaires were used for the purpose of data collection. Porter's Need Fulfilment (1961) questionnaire and Sashkin and Lengermenn's Quality of Working Life Conditions/Feelings Questionnaire (1984).

Porter (1961) designed an instrument based on the Maslowian heirarchy of needs as the frame of reference. The test measures need deficiencies and perceived need importance of individuals. It contains 13 statements to be evaluated on a 5-point scale. There are five need dimensions i. e., security, social, esteem, autonomy and self-actualization.

Each item is to be rated by the respondent on a 5-point scale and in three ways For example, typical item would appear as:

Item : The feeling of security in my level/position:

a. How much is there now ? (Max) 12345 (Min).
b. How much should there be? (Max) 12345 (Min).
c. How important is this to me ? (Max) 12345 (Min)

Part B — Part A gives the need fulfilment level.

Part C — helps in finding out the importance of each need category as perceived by the respondent.

The second tool, Sashkin and Lengermenn's QWL questionnaire has two parts — condition and feelings. The scores on these two parts comprise the individual's perception of his/her Quality of Working Life. The QWL Conditions comprise 25 items that ask the individual to try to describe his or her actual work conditions. The 25 items are categorized into 5 dimensions — autonomy, personal growth opportunity, work speed and routine, work complexity and work-related interaction.

QWLF-Feelings—the second part consists of 10 strongly interrelated items that measure the respondent's subjective feelings about his or her personal relation to work.

The items in both the parts are to be assessed by the respondent on a 4-point scale. The scores reflect the respondent's perception of his or her QWL.

Data Collection Procedure

Stage I — Pilot Study : A pilot study was conducted, on a group of 60 special educators to assess the suitability of the tests, for the present study.

Stage II — Main Study : For the final data collection every institution was visited personally by the researcher and each teacher interviewd and administered both the questionnaires individually The time span in completing the set of questionnaires ranged from forty-five minutes to one hour. If in an institution

a teacher was found to be absent, an attempt was made to contact the respondent once again, as every teacher had to complete the questionnaires since a census approach was adopted Where the teacher was handicapped visually, questionnaire items were read out and recorded simultaneously by the researcher in the absence of a braille version of the questionnaires On collection of the entire data, scoring was done and statistical analysis carried out.

Statistical Techniques

Two statistical techniques were employed in data analysis:

i. Product moment correlations were computed to determine if any relationship existed between QWLC-F need fulfilment and importance of various need categories. This was also used to examine the direction and degree of the relationship amongst the different variables in the study

ii. Discriminant analysis was carried out for two specific purposes .

a. To assess if significant difference existed in the QWL perception, need fulfilment and importance accorded to various needs between special educators working in government and voluntary educational institutions for the handicapped.

b To assess if significant differences existed in the QWL perception, need fulfilment and importance accorded to various needs between special educators working in educational institutions for the visually, mentally and hearing handicapped.

RESULTS AND DISCUSSION

To test the first hypothesis and examine the relationship of need fulfilment of the various need categories based on Maslow's hierarchy i. e. security, social, self-esteem, autonomy and self-actualisation, and the importance of the above mentioned categories with QWL Conditions and Feelings product moment correlations were computed The relationship of this particular variable with QWL will be discussed under two specific headings

a Relationship of need fulfilment and of the five need categories separately with QWL Conditions and Feelings

b. Relationship of the importance of the five need categories with QWL Conditions and Feelings.

a Relationship of need fulfilment and of the five need categories separately with QWL conditions and feelings

To determine the relationship between need-fulfilment and QWLC-F product moment correlations were computed for need fulfilment and each of the five need categories separately with QWLC-F. The coefficients of correlation values are given in Table 1

As can be seen from Table 1, need fulfilment is significantly related to both QWL feelings 19.63, and QWL conditions 25.15. The positive nature of correlation signifies that the higher the need fulfilment the higher the QWL perception of both feelings and conditions

TABLE 1

Intercorrelations of Need Fulfilment and Fulfilment of Each of the Need Categories with QWL Feelings and Conditions

Sr. No.	Vairables	r with QWLF	r with QWLC
1	Need deficiency fulfilment total	1963**	.2515**
2	Security need	1334 NS	0655 NS
3	Social need	2033**	1242 NS
4	Self-esteem need	1298 NS	1051 NS
5	Autonomy need	1185 NS	2058**
6	Self-actualisation need	0658 NS	1974**

**Significant at 01 level
NS Not significant

A detailed analysis was carried out to examine the relationship of each of the five need categories with QWL perception Results are given in Table 1. The first need category security, had no significant relationship with either QWL feelings or conditions. This could be explained by the fact that the type of job the respondents were doing i e. teaching handicapped students satisfied their basic need of security. The next level of need i. e. social was significantly related to QWL feelings 2033 but not to conditions .1242, indicating that the higher the social need fulfilment the higher the QWL feelings perception.

The higher order needs were examined next Self-esteem need category was found to have no significant relationship with QWL feelings or conditions whereas autonomy and self-actualisation need fulfilment were significantly related to QWL conditions with correlation coefficient values of 2058 and 1974 respectively. But they were not significantly related to QWL feelings.

It can therefore be interpreted from the above results that the higher-order

needs and their fulfilment play a more significant and crucial role than the basic needs in the QWL perception of special educators Need fulfilment of the autonomy and self-actualisation needs, influence perception of QWL conditions, but not the teachers' feelings about their quality of working lie This finding supports a previous study done by Mathur (1985) in the industrial set-up. There is no kind of reported research work in the Indian set-up in the area of education.

b. Importance of need categories and their relationship with QWL feelings and conditions

To determine the relationship of the importance of the five need categories with QWL, product moment correlations were computed Table 2 presents the inter-correlations of the importance of the five need categories, i e, security, social, self-esteem, autonomy and self-actualisation with QWL feelings and conditions.

TABLE 2

Intercorrelations of the Importance of the Five Need Categories with QWL Feelings and Conditions

Sr No.	Importance of the need categories	r with QWLF	r with QWLC
1.	Security	- 1570 NS	0551 NS
2	Social	- 1641 NS	1034 NS
3.	Self-esteem	- 1213 NS	1989 **
4	Autonomy	- 0492 NS	1215 NS
5	Self-actualisation	-.1611 NS	-.0182 NS

**Significant at 01 level

As is apparent from Table 2 there is no significant relationship between importance of the five need categories and QWL perception of feelings and conditions by teachers, except in the solitary case of the importance of self-esteem need (.1989) which significantly correlates in a positive direction with QWL conditions.

Discriminant analysis was used to test the second hypothesis and examine if differences existed between teachers working in government and voluntary institutions for the handicapped in relation to QWLF-C perception, need fulfilment and importance of various needs

Table 3 presents the 'F' values obtained on doing a discriminant functional analysis

TABLE 3

Discriminant Analysis of QWL Feelings, Conditions for Government and Voluntary Institutions for the Handicapped

Sr. No.	Variables	F Values
1	QWL Feelings	36 23 **
2.	Importance of autonomy need	15 06 **
3.	Importance of self-actualisation need	12.60 **
4	Personal growth	10.68 **
5	Security need fulfilment	4.11 **
6	Autonomy need fulfilment	2 46 NS
7.	Self-esteem	95 NS
8.	Importance of self-esteem	97 NS
9	Work complexity	51 NS
10	Work speed and routine	43 NS
11	Autonomy	51 NS
12	Importance of security	.25 NS
13.	Task-related interaction	.22 NS
14.	Importance of social need	14 NS
15.	Self-actualisation need fulfilment	08 NS

** Significant, if F value is 3.8 or more
NS Not significant.

Teachers from the two types of handicapped institutions i. e. government and voluntary were found to significantly differ on the following variables: QWL feelings perception (36 23), importance attached to autonomy and self-actualisation needs (15.06) and (12.60) respectively, personal growth (10 68) and security need fulfilment (4.10). Table 4 gives the means of the two groups and the grand mean over the groups.

TABLE 4

Comparison of Means of Government and Voluntary Organisations, the Grand Mean over the Groups and 'F' Values on Variables Showing Significant Differences between Groups

Sr No	Variable	Means of the two groups		Grand Mean	F Value
		Government	Voluntary		
1	QWL feelings	39 85	43 04	41.85	36 23 **
2	Importance of Autonomy	5.47	6 29	5.98	15 06 **
3	Importance of Self-actualisation	3 71	3 35	3.49	12.60 **
4	Personal growth	12 88	14 25	13.73	10.68 **
5.	Security need	- 75	- 90	- 85	4 11 **

** Significant

The results show that teachers working in voluntary organisations have better QWL feelings perception as the mean of the group is higher at 43 04 as compared to those working in government institutions (39 85).

Teachers from the two types of organisations also differ significantly in the importance given to autonomy and self-actualisation need satisfaction The means of the voluntary organisations as regards importance of autonomy need is 6 29 as compared to 5 47 for government institutions. This indicates that autonomy is far more important to the former group of teachers than the later Perhaps this also accounts for teachers from voluntary institutions having better QWL feelings perception towards their work. It is a well established fact that the need to be able to do work independently influences need fulfilment and satisfaction of individuals The nature of the organisation itself could be a positive factor influencing teachers' attitudes towards autonomy need fulfilment. The work environment in voluntary organisations probably fosters this particular need development and its satisfaction Whereas, government teachers have to abide by and work within certain rules, regulations and norms, as their work set-up necessarily demands so.

Government teachers attach more importance to the self-actualisation need, with a mean of 3 71 as compared to 3 35 for voluntary organisations The nature of the job in a government set-up does not leave much scope for self-fulfilment, as roles, functions, responsibilities and rules are clearly defined. It is probably the structured work environment that is responsible for their attaching more importance to this need Security need fulfilment shows negative values — - 75 for government and -.90 for voluntary institutions, indicating deficiency of this need, and since the later value is higher than the former it once again indicates that teachers from voluntary organisations have a greater security need deficiency than those from government schools. This could be attributed to teachers in government service being assured of secure jobs that are stable and of a permanent nature This is not so in the case of those teachers working in voluntary institutions.

Finally, personal growth in the work situation is viewed as more important by teachers from voluntrary organisations than non-voluntary organisations, with means of 14.25 and 12.88 respectively. The former group lays more importance on being given an opportunity to try out new methods of work, independence to try out their own methods of work, the opportunity to learn new skills and learn more about other sections/departments in the work set-up

By and large government institutions do not foster or promote creativity and originality by allowing teachers to experiment with new methods, approaches and develop their skills accordingly unless it is within the government's prescribed work framework However, even then these teachers do feel the

importance of personal growth as a necessary part of QWL conditions.

Discriminant analysis was also used to test and examine the third hypothesis Table 5 shows the percentage and frequency distribution of the teachers working in the three types of institutions for handicapped learners.

TABLE 5

Perception and Frequency Distribution of the Type of Institution

Type of Institutions	Frequency	Percentage
Institutions for the visually handicapped	68	28 33
Institutions for the mentally retarded	87	36 25
Institutions for the hearing handicapped	85	35.42
Total	240	100 00

Table 6 presents the 'F' values obtained on doing a discriminant functional analysis of the variables in the study

TABLE 6

Discriminant Analysis of QWL Feelings, Conditions and Variables for the Three Types of Institutions for the Handicapped

Sr. No	Variables	F Value
1.	QWL conditions	14 18**
2	Self-actualisatioon fulfilment	10 19**
3	Importance of self-actualisation	10 71**
4	Importance of autonomy	4 98**
5	Importance of self-esteem	7.14**
6	Self-esteem fulfilment	3.63 NS
7	Social fulfilment	2.73 NS
8	Autonomy fulfilment	1 93 NS
9.	Work speed and routine	2 11 NS
10.	Work involvement	1.10 NS
11	Task-related interaction	94 NS
12.	Autonomy	1 10 NS
13	Need fulfilment	0.78 NS
14	Importance of social need	52 NS
15.	QWL Feelings	58 NS
16.	Personal growth	15 NS

** Significant if F value is 3 8 or more
NS Not significant.

The three groups of teachers differ significantly in their perception of QWL conditions (14 18), self-actualisation fulfilment (10 19), importance of value attached to the self-actualisation need fulfilment (10 71), importance given to the self-esteem need (7 14), and importance of the autonomy need (4 98) as related to their working environment

Table 7 presents the comparison of means of the three groups of teachers, on all the variables where significant differences were found Teachers working in institutions for mentally handicapped had a better perception of their working conditions, with a group mean of 68 42, as compared to the lower means of the other two groups of teachers

TABLE 7

Comparison of Means of the Three Groups of Teachers The Grand Mean over the Groups and 'F' Values on Variables Showing Significant Differences between Groups

S. No	Variables	Means of three groups			Grand Mean	F Value
		Institution for the visually handicapped	Institution for the mentally handicapped	Institution for the hearing handicapped		
1	QWL condition	64 47	68 42	64 92	66 06	14.18**
2.	Self-actualisation fulfilment	-5.44	-4 19	-5.72	-5 09	10 19**
3.	Importance of self-actualisation	3 21	3 44	3 76	3 49	10 72**
4	Importance of autonomy need	6 10	6 34	5 51	5 98	4 98
5	Importance of self-esteem need	3 43	4 23	4.36	4 05	7 15

**Significant

This could be due to the fact that teachers working in institutions for mentally handicapped were mostly from voluntary organisations where the working conditions were definitely better than those seen in government institutions In the case of the visually handicapped and hearing handicapped groups more than 50 per cent of the teachers belonged to government institutions Even when the researcher spoke to the teachers working in institutions for the mentally handicapped they indicated more satisfaction and a better perception of their QWL conditions as compared to the other two groups of teachers

The importance of the self-actualisation need and its fulfilment are the other two areas where the three groups varied significantly. Importance attached to

self-actualisation is the highest amongst teachers belonging to institutions for the hearing handicapped (3 76), followed by teachers from institutions for the mentally handicapped (3 44) and institutions for the visually handicapped (3 21) A common trend is that the need deficiency has been felt by all the three groups, represented by negative signs attached to the three groups means

Within the three groups, the greatest need deficiency is felt by teachers working in institutions for the hearing handicapped (-5 72), followed by the visually handicapped (-5 44) and then the mentally handicapped (-4.19) The groups of teachers which feel the lack of this need fulfilment the most, i e hearing handicapped, also shows the highest mean for importance attached to this need out of all the three groups This is probably so as teachers working in institutions for the hearing handicapped are largely from government organisations where emphasis on adhering to rules and regulations does not sufficiently encourage spontaniety, personal growth and self-fulfilment through work. Besides this, communicating with deaf learners perhaps brings a limited sense of self-fulfilment due to limited reciprocity in self-others interaction These could be some of the reasons as to why this group of teachers feel the deficiency in the realisation of the self-actualisation need

Importance of autonomy and self-esteem, have been expressed by all the three groups. The need for autonomy is felt to be more crucial than self-esteem depicted by the higher means for the former need than the latter (Table 7)

Examining the importance given to the autonomy need, it can be seen that teachers working in institutions for the mentally handicapped give the most importance to this need (6 34), as compared to the other two groups (Table 6 7) This could be explained, as a lot of emphasis is placed on repetition and drill work in the teaching-learning situation for mentally handicapped learners This perhaps puts a constraint on the expression and realisation of the autonomy need, on the part of the teacher

Teachers in the other two groups also cannot work in a totally autonomous manner due to the learner's disability, associated problems and difficulties Even if the teacher wants to try out new methods of teaching etc , it is not always possible for him/her to do so Besides, they have to depend a lot on the use of aids and appliances in order to teach the disabled child It is these factors that probably tend to frustrate the teacher in the fulfilment of the autonomy need

Teachers from institutions for the hearing handicapped place the most importance on the realisation of self-esteem (4.36), followed closely by teachers working in institutions for the mentally handicapped (4.23), and then teachers from institutions for the visually handicapped (3.43) Teachers see themselves through their students This kind of perception is greatly lacking in dealing with hearing handicapped learners, who are unable to communicate and

reflect the teachers' achievements etc In the case of the visually handicapped learner, the learner can communicate his appreciation and admiration of the teachers better, through the use of language, as can the mentally handicapped learner to a certain extent. However. what finally emerges is the importance given by all the three groups to the higher order needs in their work environment.

CONCLUSION

The present research has indicated both the desirability and need to develop an organised and systemic frame of research in the area of QWL supported by action-oriented programmes in education, in the future QWL action-oriented programmes based on research findings are a natural follow-up of research in this particular area Thus it offers a double advantage of providing both a theoretical and practical framework of operation, to both researchers and practitioners

The above research findings specifically highlight the pivotal role, close relationship and importance played by needs, especially the higher-order and their fulfilment in the working life of special education teachers In order to improve the QWL perception of special educators, QCC plans of action and training programmes can be implemented to enhance need satisfaction thereby improving teacher-management-pupil interaction, simultaneously improving the resultant quality of education being imparted to children with special needs This will help in the realization of the cherished goal of 'Education For All'

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Research Notes

Pathology of Learning

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School, like judiciary, police and the military, is an institution and represents organised social effort at perpetuating, maintaining and modifying, as per the needs of the time, the identity of a society through transmission of knowledge and skills More than any other institution, school is solely identified with learning Of late, learning at school has been subjected to severe criticism for being totally at variance with the demands of life in a given society Let us, for a moment, consider the demands life makes on each of us The demands of the individual are primarily, the demands of the body, and secondarily, of the spirit Food, shelter, clothing, health, marriage, rearing of children, birth and death are some of the common bodily concerns of the individual The need for perfection, art, aesthetics and the ability to superimpose human will, for the individual and the common good, on the chaos or staticity of life are matters of the spirit The second set of needs requires abilities of risk-taking, problem-solving, innovativeness and entrepreneurship no less than the first set of needs It must be admitted that the school does not equip the learner either to fulfil the bodily needs or the needs of the spirit For fulfilling both, the learner must do something, engage in motor activity, in short, he must act. The qualities that are required to act are task-orientation, decision-taking, sharing and participating and exerting the force of one's will in keeping with the laws of the land The school, however, does not provide for the learning of any of the above skills except in a marginal way Learning at school is, on the whole verbal and full

of theory which cannot be put into practice while one is at school In the opinion of Reimer "The school is dead". In its divorce from the present day reality such learning can produce in the learner a yearning for a golden tomorrow which may never be attained, or a pristine yesterday which has been lost for ever *Learning To Be* (1973) also expresses concern on the lack of abilities of problem-solving, task-orientation, objective interest and innovativeness among the learners and emphasizes activity-based learning for improving the quality of education

Learning takes place when human beings act together in a concrete situation, when they undertake a project to attain something. Information is presented, evaluation undertaken, judgement arrived at, and appropriate decisions taken and carried out through motor activity. The results, if appropriate, validate the conceptual and motor activities. If not, modifications are made both in the conceptual and the motor framework and desirable results obtained. In case of difficulties attempts may be shelved for the time being, but never abandoned Verbal learning, on the other hand, requires a passive orientation on the part of the learner, that of a listener, glued to his chair Alternatively, he is, sometimes, required to repeat what he has memorized or what has been explained by the teacher. The answer must be perfect, in keeping with what is given in the textbook. Any variation or innovation is frowned upon and considered audacious on the part of the learner. For this, the learner is ridiculed, rebuked and relegated to an inferior position before the whole class The formalism of the school, thus, discourages innovation and individual response. It condemns the learner to a passive way of learning which, in the long run, impairs the functionality of the learner Learning, which impairs the functioning of the individual, both in his individual and his social capacity, can be termed as pathological

The functionality of an individual is reflected in his responses to situations and problems demanding solutions The individual will either directly intervene or seek help of others to bring about desired results However, there can be responses indicative of withdrawal, non-participation and unconcern prompted mainly by a consideration of personal safety, a dislike of working with others or a general aversion of any kind of responsibility sharing The latter responses are indicative of an impairment of functionality and arise directly out of a system of learning which discourages, year after year, locking horns, as it were, with any kind of problem whatsoever. Thus, a degree holder is oriented towards a 'cushy' job which requires of him nothing but paper work. Working with others means moving, discussing, agreeing, doing what is assigned, making others do what one desires for the completion of the project, undertaking inconvenience and risks. Such a modality of working requires highly developed individual and social skills which verbal learning doesn't facilitate Verbal learning, on the

other hand, encourges an individual to escape responsibility by helping him to establish facile exclusiveness His responses to problems and situations remain confined to the verbal level and do not flow into the situation An individual with verbal responses alone doesn't connect with problems or people having problems His responses are, therefore, ungenuine and empty. He is all the time looking for directions from others A doctor or an engineer looks for a job where work and direction from above is available This is in keeping with the aspirations raised and nurtured through all the years of study. Verbal and theoretical learning, no doubt, helps in the formulation of hypothesis but the ability to act comes only by doing things, by locking horns with the problem in the present Unfortunately, the school system provides the learner opportunities for learning only at the verbal level and keeps in abeyance the ability to act well beyond the school years. Co-curricular activities do provide for the opportunities to act, but the competition is so fierce and the school resources so limited, that only a few students learn to act Further, the ability to act is seldom consolidated or integrated with other areas of learning with the result that players are always pushed into being players and scholars into being scholars Career-minded learners never participate in game and sports, though some of them may participate in theatrical activities. However, their abilities to act are neither consolidated nor integrated with other areas of learning They are pushed into being scholars, doctors and engineers at the verbal level alone. It can be seen that powerful social forces working through parents, teachers, peer-groups, and audio and visual media constantly stereotype a learner into becoming a science student, an arts student or a student of vocational courses and forces him to remain confined at the verbal and theoretical levels alone The learner behaves as per the expectations of others and, in doing so, loses the ability of praxis He also probably loses, through long disuse, the ability to perceive the necessity of praxis Pathology of learning is the gradual and progressive learning of a disability to act.

These pathological symptoms reveal themselves in a learner in various ways Such a learner, generally, lacks commitment and concern not only for others but also for himself. Commitment and concern forces one to act. The first thing that the learner learns is to remain disengaged, uncommitted, unconcerned with what others do at school. Parents, in fact, advise their children not to be involved in groupism, in any kind of verbal response which may displease the teacher So much so that participation in tours, herbarium collection, NCC activities or activities of scouting, etc , are discouraged for the simple reason that the child may come to harm or bring external conflict to the home Parents, therefore, push their children into a unidirectional pursuit of securing a good division and promote in them a desire to be exclusive and distinctive at the cost

of all other ways like having costly and brand name clothes, having a car or a mobike or at least a scooter, being a student at a premier institution, being a member of an exclusive group of learners, etc It can be seen that while social forces are operative at stereotyping doctors, lawyers, engineers, teachers, ward boys, cooks, etc., individual forces are operative at the level of being distinctive and exclusive. Learning of skills, in the face of such fierce competition, becomes an issue of secondary importance Somehow or the other, an exclusive group. And such one can become by obtaining a certificate That is why the rush to colleges, the pressure on medical and engineering courses Becoming replaces being, future repalces the present The present is obliterated from the consciousness through memorization and the future, too, is conceived in terms of a status, not in terms of activities which one may be required to carry out.

The consequences of such an orientation for the present and the future may indeed be very harmful for the individual, in particular, and society, in general. The present is flattened out It becomes static There are no problems to be solved, nor are there any opportunities to be made use of. All the relations in the present and all the events of the present, thus, become accidental and casual. The individual begins to live in a sort of mythological time, fictitiously and vicariously He cannot talk about his textual learning in the family setting, with his teacher or with others except his peer-group Within the peer-group, too, the amount of time devoted to talking about learning (current) is extremely limited Hence, there is no validation of what the learner is doing consciously in the present. Imagine an individual consciously doing something and not being validated for any length of time! The individual feels as if he is not real and in the present time frame constantly yearns for a future when he will be real, substantial, alive and whole Sartre (1950) mentions that adoption of the futuristic or the imaginary as a way of life can change our feelings and actions to our detriment. To quote·

> To prefer the imaginary is not only to prefer a richness, a beauty, an imaginary luxury to the existing mediocrity in spite of their unreal nature It is also to adopt 'imaginary' feelings and actions for the sake of their imaginary nature It is not only this or that image that is chosen, but the imaginary state with everything it implies It is not only an escape from the content of the real from the form of the real itself, its character of presence, the sort of response it demands from us

Such an imaginary individual has damaged his capacity to react with the present He is, therefore, afraid of reacting with the present. An educated person, above all, wants an organized present where he can make use of the skills that he has learnt But who will organize his present for him? In schools, colleges, factories, workshops, at dam sites and in hospitals, where work of a serious nature is required to be carried out, highly skilled people find they do not have a conducive atmosphere to work The individual who has learnt to live

imaginatively finds the present disturbing, any kind of activity boring And, therefore, he is perpetually dissatisfied with himself, his superiors, his subordinates and society, in general We have any number of dissatisfied individuals in our working life at every level who wish others to organize their present for them to live in and be comfortable with Their dissatisfaction with their present in their vocational and professional life becomes all the more bitter with the realization that 16 to 17 years of hard verbal learning doesn't give them the kind of exclusiveness that they had been aiming at all the time. Their vision, having turned false, they lose the capacity of having any vision at all in their professional lives and cynically brush aside any practical suggestions for the improvement or better functioning of the present Cases of very bright and successful students suddenly losing interest in everything in life have been reported in the newspapers They have carried too much of an expectation load on their shoulders for too long a period

Being conscious of the harmful effects of a too academic and verbal system of education, the Government of India had introduced a new stream of vocational education after the tenth class at plus 2 level, offering the learners a choice of courses which would equip them with vocational competence It was thought that these vocational courses would help the learners secure jobs or help set up shops for themselves Thus, a certain percentage would be entering life at the end of 12-year schooling, thereby reducing pressure on the universities and colleges as also providing necessary skilled manpower for hundreds of technical jobs. However, most of the students refuse to go to the vocational courses because opting for a course signifies to them not the beginning of a new life but the end of the road. Even those who opt for the vocational courses do not join the workforce They come to the college and the university for further studies. From this, it can only be construed that the students are afraid of committing themselves to life because they know that having once committed themselves, they would never be able to realize the dreams they have all along been entertaining Parents are equally guilty in encouraging their children to have unrealistic dreams without taking into consideration the kind of opportunities that are available in our society

Computer education is a case in point Learning computer operations consolidates computational abilities by way of giving verbal learning a sort of operationality — computational tasks both from within and without the school can demarcate the present of the learner In learning to operate the computer, the learner learns to carry out specific tasks and, thus, becomes object-oriented, task-oriented. In becoming task-oriented, he learns to relate with the present and with the people in his present. He also learns to obtain the approval of people or overcome the resistance of people in relation to the tasks that he performs

Thus, in learning computer operation, a learner not only gives his verbal learning an operational dimension, at the individual plane, he also learns to integrate himself with the present and the people in his present at the social plane Such a learner is no longer motivated by a desire to be exclusive, nor is he afraid of committing himself to the present or to the problems of his present. His feelings and emotions remain in line with others in his time In being with his people and his time, he becomes a functional individual. But like vocational education, computer education, too, has been rendered useless and ineffective by the monster of verbal learning. Though computers have been provided all over the country and teachers trained, very little of learning takes place in school Computer learning doesn't fit in with the verbal mode of learning Hence, computers gather dust in schools. If at all operated, in one or two fortunate schools, they soon get out of order Repair is back-breaking It is, therefore, better to replace functionality by passivity and non-challenge, so the logic runs "The school is really dead"

In conclusion, I would like to say that schooling of a young child is not only the responsibility of the school but also of the parents and the community in general. Parent-teacher associations have been formed specifically for this purpose Very few parents turn up for the meeting If at all they turn up, no fruitful discussion takes place If discussion does take place, both parents and teachers adopt rigid attitudes, thereby reducing the functionality of the parent-teacher association to the minimum. Should the parent-teacher association not be widened to include the pupil as well because after all it is the question of the life of the pupil. The schools are required to turn out individuals who are not passive-dependent, looking up to others to fulfil their needs but active, independent and autonomous beings who can shape the present to suit the future *Learning To Be*, identifies problem-solving, objective interest, task-orientation and innovativeness as some of the ingredients of active learning leading to mastery learning. Attempts have been made to revitalise the school system so as to help the students achieve active mastery of the problems Suitable changes have been made in curriculum for teacher training to incorporate improved techniques of learning NCERT has been constantly seeking and encouraging innovative practices in teaching and suggesting to the Government timely inputs in the school system so as to improve the quality of learning Several Central Government schemes, funded by the Government of India, are being run throughout the country to improve the quality of learning Refresher courses, orientation and training courses are being offered to teachers on a countrywide basis to make education more responsive to the present However, pathological symptoms of learning will persist unless the expectation load of the learner is reduced, verbal learning is structured with appropriate

motor activity and group learning conditions are created. The aim of schooling, like that of any other training, is to improve the functionality of the individual Impairment of the functionality of an individual is a matter of concern and the Government of India and the NCERT are aware of it. That is why massive efforts have been made to provide fresh inputs into the system. However, the family members of the learner, parents, learners themselves and the society at large must become conscious of the perils of verbal learning and take due note of the pathology of learning.

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Personality Structure of Teachers

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Studies on the personality traits of teachers are not new, using Cattell's 16 P F , Mattson (1974) found that effective teachers, in medium cities, were more outgoing, emotionally mature, trusting, confident, group dependent, relaxed and less anxious Mann (1980) found that factors A, B, C, G, H, N, Q3, were positively and F, I, O, Q4 were negatively related with teaching success. In India, Mehta (1972) showed that high effective teachers were more conscientious, venturesome, tenderminded, and experimenting, whereas low effective teachers were more outgoing (A+), emotionally stable (C+), assertive (E+), surgent (F+), adventurous (H+) and self-controlled (Q3+) Since personality factors of Cattell's 16 P.F are interrelated (Whittalker, 1976, Mukerjee and Chatterjee, 1986), there would be some underlying relationships among the personality factors of the 16 P.F. questionnaire. The aim of the present study was to determine underlying relationship among the sixteen personality factors to determine personality structure of teachers

Methods

Sample

Data were collected from 84 teachers of well-known private and public schools in the four metropolitan cities of India—Calcutta, Bombay, Delhi and Madras Headmaster or Principal of the school selected those teachers on the basis of their efficiency in teaching For personal reasons, they didn't want to evaluate the teachers on the basis of performance appraisal. Teachers were elder (mean age = 43 33, sd = 9 13) and senior in their profession (mean tenure = 18 07, sd = 9 74)

Instrument

Cattell's 16 P.F questionnaire (Form A) was used to assess sixteen bi-polar personality traits of teachers These traits have been found to be generally steady and a constant source of behaviour in specific situations (Robbins, 1993) This highly reliable and valid instrument had been widely used by the researchers (Mehta, 1972, Mattson, 1974, Gupta, 1976; Mann, 1980) to assess personality traits of teachers

Results and Discussion

Table 1 shows that personality factors are interrelated Squared multiple correlation between criterion trait and other traits ranged from 0 55 to 0 79. It indicates higher level of prediction of the value of one trait from the values of other traits Factor G has a high predictive level (R2 = 0 79) and factor B

Table 1

Squared Mulitple Correlation among the 16 Personality Factors

Personality factors	Squared multiple correlation
A	0 68
B	0 55
C	0 62
E	0 65
F	0.66
G	0 79
H	0 66
I	0 67
L	0 67
M	0.68
N	0 66
O	0 67
Q_1	0 61
Q_2	0.62
Q_3	0 63
Q_4	0 70

has comparatively low predictive level (R2 = 0 55) Principal component analysis with oblique rotation was made to identify underlying relationships among sixteen personality factors Oblique rotation method is more flexible because the factor axes need not be orthogonal This is more useful when underlying dimensions are assumed to be correlated with each other (Hair,

Anderson and Tatham, 1990) Cattell and his collaborators preferred oblique rotation method in construction of personality tests (Whittalker, 1978) Three factors emerged from analysis Together, these three factors accounted for 43 7% variance of all the variables Average commonality (h^2 = 0 75) was reached by factor G which signifies low superego versus high superego strength Lowest commonality was seen for I (h^2 = 0.11), Q2 (h^2 = 0.19) and B (h^2 = 0 28)

TABLE 2

Principal Component Analysis of Personality Factors

Personality factors	Factor 1	Factor 2	Factor 3	Communality
A		- 57		40
B	-.54			28
C	59			47
E			79	64
F		55		.47
G		-.65		.75
H		76		60
I				11
L		- 65		54
M		.60		45
N		- 51		34
O	- 48			31
Q_1			64	45
Q_2				19
Q_3	61			40
Q_4	- 63			58
Eigen value	3 19	2 09	1 71	
% of variance	20 0	13 0	17 7	

N B. Factor loadings less than 0 45 are omitted

Factor 1 accounted for the greatest percentage of the variance (20 0%) and it must therefore be considered as the most important factor (Table 2) The second most important factor is factor 2. Factor 2 accounted for 13 per cent variance Factor 3 accounted for 10 7 per cent variance The arbitrary criterion at 0.45 was used for the significance of factor loadings (Whittalker, 1978). Insignificant factor loadings are omitted in Table 2.

Description of the factors is given below

Factor I (Emotional stability): Emotional stability has positive loadings on H, Q3, C, B and negative loadings on Q4 and O It means that teachers are adventurous, self-controlled, egoistic, intelligent, relaxed and secured. This

observation is in keeping with the findings of Gupta (1976)

Factor 2 (Faithfulness) Faithfulness has positive loading on M, A, and F and negative loading on L,G and N. It means that teachers are imaginative, outoging, talkative, trusting, less conscientious, and forthright.

Factor 3 (Independence) Independence has positive loading on E, and Q1. It indicates that teachers are assertive, and experimenting

To sum up, the present study characterizes personality structure of teachers in terms of three personality factors, namely, emotional stability, faithfulness and independence Since samples were drawn on the basis of selected specific criteria, one must be cautious in generalizing the data for common population

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tween Education and Productive k: A Regional Scenario

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ınal socio-economic industrial and developmental ılace globally and so also in the Asia-Pacific region. scenario calls for economic relevance of education . march towards this goal manifests itself in a variety oduction of manual work in education, pre-vocational ıcational skills, preparing for direct entry into jobs, on higher education by making secondary education . favourable habits and attitudes to productive and ging the purely bookish nature of education in favour l education, thereby, enhancing the employability of ıtes

interaction between education and productive work ı fruitful interaction between the two will not only lead nent of personality but also to familiarization and ic principles and processes involved in various service which would be useful in subsequent training on the g more informed choices about career opportunities

In the countries of this region a recurring theme perceptible in policy debates is that students in general, harbour 'unrealistic' ambitions for higher academic studies and eventual entry into white-collar jobs The prevalent academically oriented education, it is generally agreed, instills attitudes and values which are conducive to certain wage-oriented occupations rather than entrepreneurial skills and occupations based on manual skills for which there exists a demand in the world of work The past few years have seen an upsurge of interest in work and vocational education at all levels of the educational system. There is an increasing emphasis on the desirability of inculcating attitudes which are in keeping with the industrial requirements and economic realities.

Among the countries in the region there is a variation in the form that the interaction between education and productive work take in school One observes a continuous concern in these countries about how far general education should have a compulsory or voluntary component of pre-vocational education, about whether vocational education should be introduced in general secondary schools, in separate institutions, or mainly be offered in the form of apprentice training of other modes of enterprise-based training However, in spite of the differences in political outlook, economic philosophy, stage of economic development, percentage of literacy, the school curriculum in the countries of the region has included work-oriented education in one form or the other for reasons both individualistic and societal

An attempt has been made in this paper to provide an overview of the programmes of interaction between education and productive work initiated by the countries in the region The main focus will be on programmes introduced in the mainstream secondary schools

Education and Productive Work—A Synthesis of Approaches

The importance of effective interaction between education and productive work is to be appreciated in the context of providing individuals with knowledge, skills, habits, attitudes and values necessary for

— a rewarding personal and social life by developing innate talents, powers of creative self-expression, team spirit and socially desirable values

— productive contribution to the future development of society

This process of interaction within the general education system takes various forms like·

a Introducing Work Experience either in the school or through out-of-school involvement in productive work activities.

b Introducing vocational subjects in general education.

c. Inculcating work ethics through applied, practical or self paced learning methods.
d. Linking school with neighbouring commercial, industrial or agricultural enterprises for on-the-job practical work and visits
e. Establishing semi-commercial learning projects in the school.
f Studying work as a separate subject within the general education curriculum
g Organising career guidance and career counselling programmes
h Placing student in actual work situations for short durations

A review of the experiences of these countries in integrating productive work elements in general education reveals that in recent years they have either adopted new policies or restructured existing programmes for the introduction of Work Experience projects and vocational courses in general secondary schools

Regional Scenario

Before going into the actual description of the regional scenario regarding interaction between education and productive work it will be useful to recapitulate the structure of school education commonly prevalent in most of the countries in the region

School Structure

The structure of school education in many Asian countries can best be described as transitional It has been discussed in various reports of meeting and workshops organised by UNESCO, particularly under APEID. As shown in Table 1 the existing school system in Asia varies from country to country They are mostly based on a twelve-year cycle, divided in two, three or four stages These may include primary or elementary (4-6 years) ; lower secondary, middle or junior (3 years except Nepal) , secondary (2-4 years) , and upper secondary or higher secondary (2-3 years).

General Work Education Programmes

Concept and Objectives : The objectives of work-oriented general education in various countries invariably focus on human development through Work Experience The educational policies and plans in these countries have almost unanimously expressed the view that Work Experience in general education provides children with opportunities for participating in social and economic activities inside and outside the classroom, enabling them to understand scientific principles and processes involved in dilfferent types of work Effective interaction between education and the world of work must be

TABLE I

Structure of School Curricula in Asian Countries

Number of Years in School	Indonesia	Malaysia	Philippines	Singapore	Thailand	Japan	Rep of Korea	India	Bangladesh	Sri Lanka	Pakistan	Afghanistan	Nepal
13		IV											
12			IV	IV	IV	IV	IV	IV	IV	IV	IV		
11	IV												
10		III											
9								III	III		III	III	III
8	III	II	III	III	III	III	III						
7								II	II		II	II	II
6													
5													
4													
3	I	I	I	I	I	I	I	I	I	I	I	I	I
2													
1													

I Primary II Middle/Junior/Lower Secondary III Secondary IV Higher Secondary/Intermediate/Upper Secondary

Source. UNESCO Handbook for Biology Teachers, 1986.

appreciated within the context of preparing the younger generation for future work, based on the utilization of personal aptitudes and skills.

In developing general education in China the principle of integrating productive work with education has been accepted and productive work has been included in the curriculum of general education. The basic philosophy behind this is to raise the level of social productivity and to develop well trained manpower as a matter of policy Work Experience in India has been taken as a compulsory component at all stages of education to be provided through well structured and graded programmes Work Experience has been viewed as purposise and meaningful manual work, organised as an integral part of the learning process and resulting in either goods or services useful to the community The purpose of such Work Experience is to develop desirable attitudes, values and habits of work for smoother transition to the world of work and a predisposition to the selection of a particular vocation later. Teaching of practical arts at the primary level in the Republic of Korea helps students develop individual disposition of work orientation while middle schools tend to develop the skills and attitudes essential for citizenship in a democratic society, respect for work inculcating pre-vocational skills etc. The objective of introducing pre-vocational elective at the lower secondary level in Malaysia is to provide practical experiences, promote an appreciation of work-related activities, internalise proper work ethics and safe work habits, provide opportunity for creativity, problem-solving ability and develop a cooperative attitude The programmes of work-oriented education in Nepal and the Philippines too are directed to linking education to productive work and skilled manpower development.

Sri Lanka introduced vocational subjects in school curricula to introduce children to the world of work and to inculcate in them favourable attitudes towards dignity of labour. Similar objectives are echoed in Thailand where skills and knowledge as a producer, servicer and distributor to operate one's own business are also emphasised at the lower secondary school level In addition to individual or personality-related aims of work-oriented education the interaction between education and productive work also manifests itself in social service or community work In Vietnam productive work activities in general education are aimed at creating favourable conditions for pupils to directly participate in practical activities of production, thereby substantially contributing to the material well-being of the local community

Thus, it will be seen that the philosophy for the inclusion of work oriented education in general education in different countries of the region reflects a broad similarity. Acquisition of work skills, inculcation of work ethics and development of work habits are some of the inseparable goals. It may be argued

TABLE 2
Objectives of Work Education Programme

	Objectives	Countries								
		Australia	China	India	Malaysia	Pakistan	Korea	Vietnam	Philippines	Thailand
1	Positive (work) attitude/ working habits/interest/ appreciation	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	Aesthetic development		✓	✓			✓			
3	Ability to solve practical problem			✓	✓	✓	✓		✓	✓
	Improving learning/ teaching		✓	✓	✓		✓	✓		
4.	Cognitive aspects of work	✓		✓	✓	✓	✓	✓	✓	✓
5	Conservation of human and material resources				✓	✓	✓		✓	
6	Development of trainable skills									
7	Skill in performing practical work/occupation	✓		✓	✓	✓	✓	✓	✓	✓
8	Creativity in production/ skill of production/ increasing production			✓	✓	✓	✓	✓		
9	Learning of skills relevant to community/linkage with community development			✓	✓		✓	✓		✓
10	Knowledge of occupational abilities/career choices	✓	✓	✓		✓	✓	✓	✓	✓
11	Creation of material wealth			✓	✓	✓	✓	✓		
12	Attitudes and values for community living/moral development through WE		✓		✓	✓			✓	✓

from the above that any curriculum policy which hesitates to remove the chasm between work and education would prove self-defeating On analysing the objectives of productive work in the context of school curriculum one encounters a mix of pedagogical and socio-economic or developmental objectives in the literature of nearly all the countries.

An attempt has been made in Table 2 to list down 12 objectives or objective clusters as explicitly referred to in the Unesco publications on the subject based on many of the country reports in respect of Australia, China, India, Indonesia, the Philippines, Thailand and Vietnam For some of the countries, however, where objectives are not explicitly referred to, they have been derived from policy statements and course content In this Table the absence of tick mark does not necessarily represent the absence of that particular objective in the work education curriculum of the country but only that an explicit reference has not been located in the available literature

The analysis carried through this tabulation leads to the following conclusions.

— There is clear blending of educational/pedagogical objectives with the socio-economic objectives in a fair proportion in all the countries
— There is a great deal of similarity between the objectives of the programme
— The commonality of objectives reflects more strongly in case of positive work attitudes, values, cognitive aspects of work, skills in performing practical work, problem-solving abilities and the knowledge of occupational abilities.

In a similar context the objectives of Work Experience programmes in secondary schools as prevalent in the Commonwealth countries have been summarised (Table 3) into three broad categories· Philosophical/pedagogic, social and economic

TABLE 3

Objectives of Work Experience Programmes in Secondary Schools in the Commonwealth Countries

PHILOSOPHICAL / PEDAGOGIC OBJECTIVES
Facilitate transition from school to work
Equalise work opportunities for boys and girls
Improve the opportunities of the less academically able
Improve critical thinking skills through decision-making in job experiences
Acquire practical experience in literacy and numeracy skills related to specific jobs
Motivate youth by making curriculum more relevant and meaningful to their own experiences
Give practical experience in the area of vocational choice

SOCIAL OBJECTIVES
Develop positive attitudes to practical/manual work
Instil healthy work ethic
Learn how people earn their living through experience of varied work processes
Enable career choice
Instil self-discipline
Develop self-confidence/positive self-concept
Learn the importance of attributes desirable in good employees (e g punctuality, cooperation)
Stem sex-role stereotyping of employment opportunities
Learn nature of social relations at work
Occupy potential drop-outs/truants
Facilitate communication between school, parents and employers

ECONOMIC OBJECTIVES
Increase awareness of employer's expectations
Reduce economic costs by keeping young longer in school
Preparation for jobs (other than 'white-collar' type)
Assist youth in getting permanent employment
Enable young people to explore business and industry
Sample variety of jobs
Preparation of 'low achievers' for low status occupations
Develop agricultural basis of national economy
Enable school to become partially self-sufficient

Programmes and Projects: The efforts to bring about an effective and purposive interaction between education and productive work have resulted into a flexible approach in the implementational strategies Nomenclature for work education programmes vary from country to country although objectives broadly remain similar It is referred to as Work Experience or Socially Useful Productive Work in India, skill or pre-vocational education in Indonesia and Myanmar, practical arts in the Philippines, work and vocational education in Thailand, productive work in Socialist Republic of Vietnam, work and skill education programme in China and life skills in Sri Lanka.

The concept of work-oriented education presupposes that there cannot be a single unified curriculum for all schools as there are vast differences in the local environment, levels of industrial and business development and the felt needs of the community This realisation in India led to the development of suggestive curriculum guidelines at the national level leaving enough freedom to the States and individual schools to evolve their programmes to suit the peculiar nees of the respective localities There are two types of activities both at the upper primary and secondary levels, namely, essential activities and elective activities. Essential activities consist of those which require very little investment, can be performed by all schools and are meant to satisfy the day-to-day needs of the learners, schools and the community whereas elective programme comprises activities which mainly lead to skill formation through

need-based productive activities or projects Activities for the primary stage are chosen from the diverse areas of child's need such as food, clothing, shelter, culture and recreation etc to provide a wide variety of productive learning experiences along with an experience of participation in community life to children. At the upper primary stage the number of activities and the range of diversity is gradually narrowed down as a deliberate design to provide more depth to productive learning experiences. A step of furhter specialization is attempted in the lower secondary classes under the name of pre-vocational programme which leads to full vocational specialization at the higher secondary stage

In China the work and skill education programme is well established in the primary, junior high and senior high levels It is closely linked with moral education. The programme also helps in the development of aesthetic values The work and skill development programme integrates more closely with scientific subjects like electrical engineering and electronic technology with physics, gardening and livestock raising with biology Similar experience can be observed in India as well where many subject-based Work Experience activities are selected and conducted by the respective subject teachers 'Learning by doing' is the main concern of work-oriented general education. Similar view is reflected in the national policy of Republic of Korea which stipulates that school education should deal with contents highly transferable to changing technologies and jobs and lay the foundation for the acquisition of specific skills later through job performance

A well-graded programme of work education is found in Malaysia as well where at the primary level practical business studies is integrated as part of mathematics syllabus to expose students to daily business transactions and basic calculations At the lower secondary level students follow general academic subjects along with one of the four main electives of a pre-vocational nature. These electives include Industrial Arts, Home Economics, Commerce and Agricultural Science Life skills are taught in Sri Lanka from year VI to year VIII and teaching of technical subjects like Carpentry, Metal Work, Commerce or Home Science commences at year IX Ratio of vocational subjects to general subjects likewise varies in Thailand according to level of education and location of the school Pre-vocational and vocational subjects are integrated into primary and secondary school general education curriculum Time allocated for work-oriented activities is 10 per cent of the total learning time for grades I and II, 20 per cent for grades III and IV and 30 per cent for grades V to VII.

The integration of work activities in all educational subjects seems to have become a general strategy in the Philippines. Work Experience course there is organised as a separate subject to be taken by all students for one hour daily from the first through the fourth year of the secondary school. Depending upon the

economic situation and resources available the projects or activities may be school-based, home or community-based or a combination of both In order to prepare the child as an individual, a citizen and a productive agent work education is formalised in grade IV as Home Economics and Livelihood Education The emphasis is on development of positive work attitudes, basic work skills and production of useful goods In grade V and VI at least one work area out of Elementary Agriculure, Home Economics, Industrial Arts, Retail Trade and others is emphasised Work-oriented education in secondary schools takes the form of Practical Arts.

Productive work in general education schools in the Socialist Republic of Viet nam is of vital significance for building its economy and improving the living standard The subject of vocational guidance in general primary schools provides students with basic knowledge of trades and guides them in choosing suitable jobs while another subject of working technology provides knowledge of basic techniques, skills and economic management The knowledge of working skill requirements increase gradually from Form VI to Form IX. A subject of general technique having technical theory and productive work as two components is taught in normal general secondary schools

The programmes and projects described above indicate that for bringing about an effective integration between education and productive work the projects or activities chosen should be based on local needs and resources, the programme should be well planned and graded and the teaching-learning be so executed that the three aspects of 'do I know' 'do I do' and 'do I have' are properly emphasised such that awareness about the world of work, cooperative work habits and exploratory work experiences at the primary and upper primary or middle classes lead ultimately to pre-vocational skill education at the secondary level followed by vocational education at the senior secondary level.

Another distinctive feature discernible is that unlike many developed countries where Work Experience programmes are seen mainly as fostering the development of personal and social skills, in developing countries the work education programmes are largely geared to achieving wider objectives

Summary of interactional strategies It is seen from the above that the process of interaction between education and productive work in the general education system acquires various forms depending upon the needs, resources and socio-economic and political considerations Students engage in Work Experience programmes both within and outside the school. These programmes have a variety of content, viz. teaching of life skills, providing pre-vocational electives, conducting career guidance and career counselling programmes, integrating work activities in general education, placing students for on-the-job work and also introducing vocational/technical subjects like agriculture, home-economics, commercial and industrial art education as integral part of general

education There are also examples of Earn While You Learn projects and semi-commercial learning projects being run within the school.

All these programmes and projects, however, aim at bridging the gap between the world of school and work, between theoretical and practical and between general and vocational education. Right from the primary stage the programmes consciously endeavour to infuse in children a positive attitude towards work and workers, awareness about the work situations and work practice which in a subtle manner provide a vocational orientation to the young mind. At the end of the lower secondary level students become more knowledgeable about the world of work and better prepared to meet the challenges of the working life

Employment Oriented Vocational Courses

While the purpose of work education programme in schools is to orient the children to the world of work, inculcate in them the desired personality traits and build a foundation for later vocational education, vocational education courses aim at meeting the needs and aspirations of the individual as well as those of the society, thereby, contributing to the socio-economic enhancement of both. Vocationally competent manpower plays a crucial role in increasing productivity, creating wealth, ensuring socio-economic stability and providing efficient services to the society.

Emerging Trends

Emergence of vocational courses, particularly at the senior secondary level in many of the countries in the region, can be attributed to the following trends:

- Expansion of secondary education system;
- Diminishing quality of higher education due to excessive pressure on it, from school graduates,
- High unemployment rate amongst the educated (secondary to degree levels);
- Vocational education being viewed as the instrument for the remedy of dangerous social trends;
- Need to siphon-off a sizeable segment of student population to vocational stream through proper guidance,
- Inclusion of non-traditional, technology-oriented courses for girls in larger numbers and of greater variety,
- Increasing demand for vocational courses to suit the rural context,
- Promotion of self-employment and entrepreneurship.

Vocationalization of education is a much broader concept of education It

tends to bring real life and education closer for meeting the national goals Vocationalized education provides skill in addition to providing education for the development of personality and for successful performance of responsibilities as good citizens.

Programmes and Projects

In keeping with the above thinking each country in the region is in a continuous search for ways and means through which work and vocational education can create an impact not only on the lives of the students but also on the life of the community Bangladesh offers trade courses in vocational training institutes and technical training centres. The courses are of 2-year duration after SSC or Class VIII The programme consists of institutional training coupled with attachment in the industries. Trainees on completion of each part are employable as semi-skilled and skilled workers. In China, vocational education is provided to all students who select to go to vocational schools These vocational schools have greater flexibility for responding more readily to local needs In recent years the vocational schools have grown in numbers. The students pay for their studies in these schools. At the secondary stage in China On-the-Job Training (OJT) is an integral part of education It covers a wide range of activities in farms, factories, offices, workshops and other miscellaneous practical situations

The programme of vocationalization of higher secondary education in India was launched during 1976-77 By 1985-86, 120 different vocational courses in the areas of agriculture, business and commerce, engineering and technology, health and para-medical, home-science and humanities had been introduced in about 2000 institutions Since then there has been a steady increase in the number of courses offered, students enrolled and the number of vocational institutions During 1989-90, under a scheme sponsored by the Central Government there were about 151 different kinds of vocational courses in 4801 general higher secondary institutions or junior colleges all over the country. Total enrolment of students in vocational stream was above 1,68,000 during 1989-90

India today has a rich and varied experience in implementing the programme mainly because of freedom given to the States for experimentation. As an example, one of the States runs vocational courses in separate institutions whereas in most other Stastes and Union Territories these have been introduced in separate streams in the existing higher secondary classes located either in colleges, schools or special +2 level institutes

Experience indicates that unless maximum weightage is given to theory and practice of vocational courses, employable skills cannot be developed amongst vocational products Today the vocational curriculum generally

provides for 30 per cent weightage to language(s) and General Foundation Course and 70 per cent to vocational theory and practice

In India also the On-the-Job Training (OJT) is a compulsory part of vocational curriculum at the plus two stage Further, the selection of vocational courses is to be based on the findings of district vocational surveys for the conduct of which comprehensive guidelines have been developed by the NCERT, New Delhi

There are elective vocation subjects in the Repubic of Korea These aim at helping students acquire basic knowledge and skills needed in daily living, exploring career possibilities, developing respect for work and enabling students to prepare for effective participation in the world of work

In a bid to provide occupational information and guidance to students Korea has initiated the development of career education curriculum and instructional materials specifically defining objectives and contents of career education The Board of Education has encouraged the general high schools to establish vocational classes and financed them since 1976 As of 1985, 504 vocational classes were operating in 154 general high schools, nationwide The vocational courses curriculum have since been revised to encompass broad based contents, not limited to specific skills or technology but designed to enable students to effectively adapt to changing technology and the world of work. Similar change in thinking is also perceptible recently in India where trend is towards evolving a programme of vocationalization for all with emphasis on non-occupation specific across-the-board transferable skills

Vocational high schools in Korea can be classified into agricultural high schools, technical high schools, commercial high schools, and fishery and marine high schools.

Vocational education in Malaysia can be terminal or continuous At the upper secondary level students can choose one of the four streams namely academic stream, technical stream, vocational schools or vocational short courses. Technical stream provides technically biased education to develop interests in engineering, agriculture or commercial careers Vocational schools provide employable skills and necessary general education Then there are vocational short courses which provide skilled training for specific jobs At the end of grade XI on passing Malaysian Certificate of Education (MCE) examination or Malaysian Vocational Certificate of Education (MVCE) examination students can secure appropriate employment in both public and private sectors or go for further education in polytechnics and training colleges

The two types of institutions in Malaysia having relevance to present discussion namely Secondary Vocational Schools and Secondary Technical Schools need specific mention because of their distinctive characteristics

Secondary Vocational Schools provide vocational education to students

who have completed their lower secondary education The primary aim of these schools is to provide practical training in employable skills and a small component of general education to ensure their future advancement Secondary Technical Schools on the other hand are specially equipped to teach technical subjects These schools also provide courses at grade 12 and 13 and are equipped with specialised facilities like science laboratories, workshops and drawing rooms.

Some of the salient features of the programmes are.

- There are secondary vocational schools, special secondary vocational schools, technical schools and technical teachers training colleges
- Courses are identified by specially constituted committees and through viability studies. These are instituted in separate institutions
- Curricula are designed and developed centrally
- There is no fee for vocational and technical courses.
- Schools are well equipped having subsidized hostel facilities.
- All teachers are vocationally trained and full time.
- About 60-70 per cent students coming out of skill stream from secondary vocational schools get either wage or self-employment
- Cost of imparting vocational education is very high
- Linkage between school and industry is very weak

Vocational education is offered over a broad spectrum of skill level in the Union of Myanmar Training for different skill levels is provided at different types of institutions, namely, State Agricultural Institute, Government Technical Institute, Technical High Schools, Vocational Schools and School of Home Science While the School of Home Science is reported to be most successful, no females are accepted in Technical and Agricultural High Schools and the Fishery School Few Technical High Schools also run evening courses in addition to the full-time ones Technical High Schools train semi-skilled or skilled tradesmen in basic technical trades. The course of two years is followed by on-the-job training for six months

The school accepts outside work orders to accomplish work using the school facilities Three quarters of the labour charge is made available for students' welfare

Efforts to vocationalize education were made in Nepal during early sixties through the scheme of vocational secondary schools But later these had to be closed in favour of technical school scheme These are of two types, namely, Rural Technical Schools and Urban Technical Schools Types of trades and number of trainees are decided according to projected demand pattern at least for ten subsequent years The training is skill intensive and courses are run in close coordination with local development activities About 80 per cent of the

time is allocated for skill training and the remaining 20 per cent for liberal education

New proposals in the area of vocationalization of secondary education in the Philippines are based on the philosophy that "students must experience work and must use all their faculties' intellectual, attitudinal and manual to find the meaning of work in man's life, to value it, find fulfilment in it and to produce the best that his individuality can produce The end product of the programme is an educated worker, a worker skilled in making use of his intellectual skills to direct his hands in their manipulative performance, a worker who values work and, therefore, a worker who is committed to the highest level of performance in his work". In the Philippines specialised vocational education has been upgraded to the post-secondary level Based on many studies it has been concluded that a secondary school graduate (16 years) is expected to acquire a high level of general education to be able to learn further and to facilitate further acquisition of skills to enter the world of work

The implementation pattern described so far shows two clear approaches introduction of vocational courses in general education institutions, and, in separate vocational or technical institutions

Pakistan provides vocational subjects at the secondary level out of the following groups general, commercial, agriculture, industrial, home-economics Earlier these were made compulsory but non-examinable subjects but in the revised scheme of studies vocational subjects are to be made electives for the non-science group

In Sri Lanka opportunity is provided to children to develop simple basic skills through subject areas like agriculture, handicraft and metal work These need not necessarily provide professional skills The most popular vocational subject is agriculture There are 13 vocational subjects available to general secondary schools out of which schools choose according to their facilities and resources. Every student has to study one of these subjects in order to quality for graduation

The vocational education programmes in Thailand are administered, managed and supervised by the Department of Vocational Education which is one of the fourteen departments under the Ministry of Education Diversification here starts after first 9 years of general education. At grade 10 students get three options (a) they may continue their general education in higher/upper secondary schools, (b) join technical / vocational / agricultural colleges, or, (c) undergo apprentice training. The vocational education programmes are offered by the technical / vocational / agricultural colleges, polytechnic schools and area vocational centres Some salient features of the programme in Thailand are

— The Department offers a variety of programmes for different target groups
— Courses are identified at the national level through committees
— Curriculum is designed and developed nationally by involving all concerned.
— Vocational courses are offered in separate institutes which are fully equipped.
— Teachers are appointed on permanent basis
— Evaluation of student performance is done on continuous basis by the teacher concerned and results are declared by the institution.
— Every college has a vocational guidance, counselling and placement unit.

The dichotomy between intellecutal and work-oriented education does not exist in Vietnam. The process of interaction between general education and productive work is quite comprehensive It varies in nature from one type of school to another The General Secondary Working Schools of Vietnam, teach general and technical subjects Professional productive work is an important task set to the General Secondary Working School and time devoted to general subjects is less than the Normal Secondary Schools There are also Non-formal Secondary Working Schools which provide vocational education along with non-formal secondary education programme. After graduating, students mainly work in some cooperatives of local small industry or at home. They can, if they wish, go for further general education Besides, there are technical general secondary schools which provide the students knowledge of general secondary education and also knowledge and skill of common trades. Another type of school namely Vocational Technical Secondary School trains skilled workers from graduates of primary schools. Schools in Vietnam are closely linked to society.

Vocational Education — Efficacy of the School Based Programmes

An analysis of the programmes and projects implemented by the countries of the region covered under employment-oriented vocational courses shows that the entire vocational education system in the region is influenced and at times controlled by the distinctive economic, demographic, political, cultural and social factors But at the same time the experiences gained by these countries over the years are rich and varied.

In many countries of the Asia Pacific region the school-based production of industrial manpower has proved to be quite successful. This, in a way, contrasts with experiences in many other countries where the school-based programmes have been found to be cost ineffective and unsuccessful experi

ence. The following account substantiates the strength of the school system, taking the example of Japan, Republic of Korea, China, Malaysia and Indonesia

While Korean experience presents the successful development of the dominant formal vocational school system, China presents a distinguishing feature of technical and vocational education and training in the form of the close linkage between training institutions and industry. This makes training relevant to industry's requirements and increases external efficiency

School-linked enterprises in China are of two types: (i) factories which are attached to schools, and (ii) farms run by technical and vocational schools The students obtain practical training in the factories This training is closely linked to the production processes, schedule and targets In this way costs are kept low Farms are used by students to gain practice Peasants too learn about advanced farming techniques.

Collaborative arrangement between schools and industries as the implementation strategy for vocational education programmes was envisaged in India in the NCERT document, 'Higher Secondary Education and its Vocationalization (1976)'. Ever since the introduction of vocationalization in the school system in several States and Union Territories collaborative arrangements have been made in a majority of vocational programmes and the success of the programmes revolved around such effective collaboration

The main sources of skilled manpower for middle-level skilled employment in Indonesia are the Technical Secondary Schools (STMs) and the Secondary Vocational Schools (SVSs) Those who complete education at STMs are generally well received by employers STM graduates also show a substantially better record than graduates of general academic schools It is also found that a higher proportion of them receive higher rates of pay as well. Similarly, some SVS graduates get jobs more quickly and hence have a shorter waiting time. The STMs and other vocational schools attempt to link closer with industry in order to raise the skills of trainees as well as to reduce costs They are also establishing production units and cooperative ventures in schools.

Technical Vocational Education and Training in Japan is provided in the formal education sector, non-formal sector and also in enterprises In the formal sector it is provided in upper secondary vocational schools and special training schools At the upper secondary level, about 31 per cent of the general high schools offer some vocational courses, 16 per cent of high schools are specialised vocational schools in areas like agriculture, industry, business, fishery, home economics and nursing The proportion of vocational school students (26.4 per cent) at the secondary level is higher than the average level of 20 per cent for advanced countries and much higher than that of developing

countries. The provision of technical vocational education/training in the formal sector is substantial

Upper secondary education in Japan is made up of two main streams — general and vocational Vocational streams consists of industrial, agricultural, business, fishery, nursing and other courses Students graduating from vocational courses in the schools receive substantial pre-employment vocational training thereby developing employable skills

In Japan students enter vocational courses only as a second choice. Nevertheless, many do enrol in vocational schools

In recent years, however, a phenomenon is emerging in Japan, as well as in the United States and some European countries i e the service sector seems to bestow greater prestige on vocational and technical education This is reflected in the growth of the commercial courses in vocational schools, which account for 40 per cent of all vocational courses Sixty per cent of all high school graduates find employment in the service sector

With the advent of computer technology and the employment shift to the service sector, vocational schools in Japan are beginning to acquire some sophistication and respectability Further, with the narrowing of salary differentials between high school and university graduates a growing minority of young people feel that the large expense involved in gaining entry into universities may not be any longer justified and a diploma from a vocational school might do. This is particularly so because companies here have now started to reward initiative and creativity more substantially and rapidly

Today, enterprises are an important source of vocational training in Japan About 600,000 young people (or 41 per cent) are trained in companies as against a little more than 50 per cent (740,000) in vocational institutions

The Japanese experience is often held up as an example of a highly successful training model There seems to be a high correlation between education and industrialization in Japan

In the Republic of Korea the current output of vocational schools is substantial. It is the major source of skilled workers at the craft level which accounts for about 70 per cent The career profile of vocational high school graduates shows that more and more students are able to find employment which increased from 49.9 per cent in 1981 to 82 1 per cent in 1989 The percentage of graduates entering higher education decreased by more than half from 13 8 per cent in 1981 to six per cent in 1989 which reflects the successful outcome of vocational eduction in the formal education system Most of the graduates of vocational high schools enter employment, a small proportion enter junior vocational and other colleges or join the army

The employment rate of vocational school graduates in the Republic of

Korea is higher than that of the general high schools It has been found that vocational school graduates are more acceptable to employers than general education graduates.

Another feature that has helped to improve the internal efficiency of Korean vocational high school system is the strong linkages it has established with industry.

South Korea is an outstanding example of a successful system where the dominant mode of training is the school model Many of the traditional weaknesses often associated with school-based training (e.g. high cost of training, inflexible curricula, lack of linkage with industry, poor quality of training, low level of skills, poor earnings of graduates, high rate of unemployment, high instructor attrition rates) have been overcome with political commitment, sound planning, cooperation among formal and non-formal sector and enterprises, and external aid

Issues and Problems

A review of the vocational education programmes and projects offered in the countries of the region reveals a general agreement that educational programmes which aim at providing individuals with skills relevant to the development needs of the society are likely to be more economically valuable both to the individual and society than an education which does not transmit such skills. In keeping with this thinking various strategies have been adopted to meet the projected trained manpower needs.

But on the implementation front there are problems and constraints These include — lack of clarity about curriculum offerings, problems of evaluation, dearth of specifically trained teachers, lack of acceptability on the part of students and their parents, high costs, demanding management structures and provision of raw materials, tools and equipment including their maintenance and repair. Following is a brief description of major issues and problems faced by the individual countries in implementing the vocational education programme in schools

Technical vocational education in Bangladesh faces three main problems of high drop-out rates, difficulty in job placement and social non-acceptance The main issue facing technical and vocational education and training in China is that of readjusting the balance between general secondary education and technical and vocational education and training The almost virtual closure of technical and vocational education and training during the Cultural Revolution in the late 1960s and early 1970s led to a severe shortage of skilled workers. The percentage of students in the Technical Vocational Education and Training programmes fell from 48 per cent in 1965 to 2 per cent in 1970 In an attempt

to improve the capacity of the training system, a number of senior high schools were changed into vocational, agricultural and technical schools and vocational courses in industry, agriculture, commerce were introduced in others in 1980 By the end of 1988, the enrolment in all vocational schools rose to more than 20 per cent of all secondary level enrolment but the quality of instruction remains poor. The target in China is to place at least 50 per cent of its secondary school students in vocational education and training programmes Industrial enterprises in China are assuming greater responsibility for the educational training of their staff and are now increasingly sharing the preservice training with the formal system.

In India the implementation of vocationalization programme is in the hands of the States while a large share of funds are provided by the Central Government The pace and tempo of implementation vary from State to State depending on several local factors There exists no joint mechanism for implementation today except the mechanism of consensus and persuasion through dialogues, meetings and conferences at different levels Another issue relates to financing without proper monitoring While the funds have been liberally provided the monitoring has been limited to organising conferences and meetings with the officials of the States Recently a Joint Council of Vocational Education (JCVE) has been constituted at the national level as an umbrella body under the Ministry of Human Resource Development incorporating representation from all existing vocational authorities/Councils and some State Governments It will plan and coordinate the different vocational programmes and lay down guidelines and also evolve schemes for involvement of public and private sector industry in vocational education

Another issue to be tackled in the immediate future is the development of a management cadre at the Central as well as State level with persons having expertise in different fields of vocational education and capable of handling the intricacies in planning and implementation with particular reference to the problems in vocational curriculum development, teacher training, linkages with industry and such other things of technical nature The development of school-industry linkage in respect of various phases of programme implementation is regarded as the most vital aspect for greater internal and external efficiencies of the school-based vocational education programme

A very positive feature of vocational courses in India is the emergence of a set of sponsored courses which are implemented in the general higher secondary schools in partnership with the user organizations. These students are assured of job placements provided they attain a particular standard of competency

The studies conducted by the National Council of Educational Research and Training (NCERT) have clearly brought out the fact that the vocational

courses are quite popular There are some definite information on the profile of students opting for these courses Majority are not the first generation learners, do not belong to weaker sections of the society, come from middle income groups and are middle level academic achievers.

Another feature of implementation in India worth mentioning is the recent emergence of State or Division (Mandal) level vocational education centres having centralised facilities to be used by the students of some neighbouring higher secondary schools attached to them.

These centres also have plans to introduce non-formal need-based vocational courses for out-of-school youth and for working learners

Industry linkage is not completely developed in the Republic of Korea. In some schools on-the-job training is not adequate, leading to low levels of skill training The average class size is still too big for practical work and training. Teachers lack knowledge about career education. There is also shortage of qualified vocational teachers in general high schools. These schools also have shortage of facilities. There is decline in the number of students opting for vocational classes Teaching is too much oriented to vocational training rather than education

The main problems and difficulties faced by authorities in Malaysia revolve around the need to keep pace with technological development and changing trends of industry. The need to shift from training based on manual skills and psychomotor activities to one oriented to a higher level of cognitive skills is apparent Another problem, which is being experienced by almost all the countries of the region is the lack of commitment on the part of industry as a partner in training The need to institutionalize school-industry linkages to market the products trained is crucial

In Pakistan while there has been a large expansion in the last two decades the administrative structure has not kept pace with the expansion The resources made available to technical vocational education and training are inadequate. In the formal sector each of the provinces conducts its own training without any coordination Parents have a negative attitude towards vocational education. Due to non-examinable character of vocational subjects teachers do not teach seriously and periods meant for vocational education are generally given to other subjects. Introduction of vocational education in general schools has resulted in increased workload of already over-burdened students. Non-availability of trained teachers and suitable instructional materials are other problems

The major problems encountered in the development of vocational education in the Union of Myanmar are partly socio-economic and partly organisational in nature. Lack of finance, lack of resources, preference for white collar jobs

and non-availability of trained/experienced teachers are some of the problems in Myanmar. Issues of marketing have emerged in the Philippines where the problem is how to distribute the goods under reasonable return of investment Other issues relate to non-availability of qualified teachers and doubts about the efficacy of work experience programme. Parents of high socio-economic status maintain that the programme is irrelevant for those students who belong to upper socio-economic level.

There is no comprehensive manpower planning in Sri Lanka. This has created problems in identifying the training needs of the country. Teachers are inadequately prepared to teach vocational subjects. There is lack of interest in them to get involved in work oriented activities. Many Principals too have negative attitude towards vocational subjects. Certain other problems in Sri Lanka relate to lack of equipment, workshops, funds and facilities. Further, the links between the education and training institutions and the industry are weak

In Thailand vocational courses in general education are developed centrally This results into lesser flexibility to cater to the local needs. The system there is experiencing inadequate support from public and private enterprises for on-the-job training Inadequately trained and less experienced teachers are problems in many countries including Thailand and Vietnam Shortage of materials and teachers is also a common problem Collaboration with local industries is also very much required. There is also shortage of books and suitable instructional materials in Vietnam

A common issue of psychological nature is perceptible in almost all the countries in the region including India, Sri Lanka, Thailand, Vietnam, Pakistan, Myanmar and others It relates to a negative attitude of the society towards work education in general. Parents, teachers and students, all consider the subject of work and vocational education as inferior in status and almost a waste of time Principals allot these periods in the timetable to other traditional subjects Such a mentality in favour of white collar jobs probably is a legacy of colonial system of education and will take some time before the realities prevail over inflated aspirations An impartial analysis of the present day realities make it amply clear that there is no alternative to work culture. In a scenario of contracting wage employment opportunities, diffused caste and class barriers and increased population pressure a large number of youngsters will have to opt for para-professional jobs, self-employment ventures and skill-oriented occupations.

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Continuing Education Programme in M.S. University of Baroda, Gujarat: A study

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Education is a vital input for social change and national development A democratic society lays stress on egalitarianism and social justice and it generates pressure on education A system of education elitist in character and inaccessible to many does not fall in line in such a polity. Education in India for long was not within the reach of a large majority of the people. However, what is paradoxical is that since Independence there has been tremendous expansion in education but it has still left many outside the system On the one side the expansion of the formal system has swelled the output, on the other hand the system has not been able to attract more to capture illiteracy, inequality and underdevelopment

The relevance of education has been rightly observed by the UNESCO commission on education that educational institutions are a decisive factor in training men to contribute to the development of society, to play an active part in life and in properly preparing men for work (UNESCO 1972) Expansion and spread of education, therefore, is a necessity both for modernisation and for sustaining the democratic polity Education brings awareness, development and enables man to be himself, and become 'himself'. Today, modern technology has provided us with several tools for spreading of education and quality instruction and choicest courses. It is against this background of the necessity of spreading innovative vocational higher education to people through continuing education centres spread over the length and breadth of the country that this study was undertaken

Formal education once thought of as the soul of educated people for their

whole life is now considered as inadequate because continuous rapid growth of new knowledge, obsolescence of old knowledge, the shift in national priorities, the multiplication and complexity of social problems and the close relationship between the application of knowledge and social, economical, political progress all lead to the view that life-long learning is not only desirable but inequitable Moreover, our conventional educational system is mainly oriented to theoretical knowledge of different disciplines and caters only to youth; it does not readily accommodate adults for learning. It does not take care of the practical needs of adults as well as youth and professional areas, which is very important to act in day-to-day life Above all, the extended schooling believes that the longer we keep the younger away from work and life, the more they will have learned

A person who does not continue year after year to add his knowledge and insight can never really be an educated man. In fact, change is a law of life. Nothing remains static Our interest gets either broadened or narrow and our thoughts get deepened or become even more shallow We grow in knowledge and perception or our mind shrinks away to insignificance. and it is the ripe fruit of continuing education which provides the nourishment, the mind needs to grow in vision. According to William Benton, "A university degree at least in science should lapse after ten years unless it is refreshed" (Sir Eric Ashby, 1972) Similar views are presented by the world of business, "what was studied in college is yesterday's knowledge. . No matter how much education one has, it is not enough unless one devotes time and energy to continuing his education, he will become an educational drop-out".

As far as the term 'continuing' education is concerned, it is continuous education for adults and youth to cater to life, career, and leisure Purposeful activity of individual to satisfy various needs and the other necessities which have emerged out of the needs for active citizenship and nationalism Continuing education is a comprehensive term embracing those aspects of the educational process involving in addition to general education, the acquisition of pratical skills, attitudes, understanding and enhancing knowledge relating to career and other sectors of economy, life and living. General education and a consistent continuing education effort has its impact upon the enrichment of life, attitude, aptitude, interest, creative potentialities and overall life and living In order to live an enriched life and career satisfaction, continuing education programmes are needed for different sectors of the economy. It adds to the confidence and efficiency of a person by exhibiting and living the best in life. Moreover, it helps to increase national economy by performing qualitative and useful activities Therefore, there is a need to look into continuing education programmes offered by the centres for continuing

education and understand the background of the candidates going in for the programme and their perceptions of continuing education. Before going into the actual study it is necessary to know about the studies conducted in this area Some of the main studies are by Kapoor 1978, Charavorthy 1988, Bhatia 1990, Kundu 1992, Arora 1992. In addition to these a few studies stress the need and relevance of the continuing education programme UGC guidelines further reflect and present the scenario of the continuing education in the country. About ninety-five universities are currently having departments / centres of Adult, Continuing Education and Extension.

At present there is a felt need to conduct some studies in these centres of continuing education to bring out the area specialities and commonalities in the programmes. More so, what kind of expansion and qualitative changes in the programmes could be brought about to cater to the community at large. Since there has been no study carried out in Baroda, Gujarat, the investigator felt the need to underake the present study of the Centre of Continuing/Adult Education, M S. University, Baroda.

Objectives of the Study

1. To enlist long-term and short summer courses offered by the centre for Continuing / Adult Education of M S. University, Baroda since 1990-93
2. To identify the background of students joining these courses of batch 1992-93 session — age, sex and educational qualifications
3. To study the reasons for taking up such courses by students
4 To study whether the course content of the courses is meeting the needs of students
5 To study future needs of the students in terms of launching fresh courses.

Methodology

The present study was confined to the Centre of Continuing Education of M.S. University, Baroda. To draw the subjects a list of the candidates admitted in different courses offered by the centre was collected and the students of the present batch 1992-93, contacted in actual classroom setting as subjects for the study In addition randomly selected ex-students of the previous two batches (five per cent) candidates of each of the long-term courses and short summer course formed the sample for the study. The official records and a copy of course content of each course offered along with the teacher of each course provided the basic information and source of primary data

TOOLS

A questionnaire was developed with 2 items by the investigator To avoid vagueness of the items, the questions were sharpened and to assert its validity the questionnaire was given to ten experts for their opinion Suitably modified in the light of the comments of the experts the questionnaire was administered to the students and the responses collected in the shape of opinion on each item. The opinions expressed itemwise were analyzed respondent categorywise with percentages

PROCEDURE

The study conducted takes into account long-term courses from 1988 to 1993. The available records were scanned to collect the base-line data Interview with students of the past and the present, faculties teaching different courses and the core staff of the centre were the main sources of information An analysis was done to indicate different factors of the continuing education programmes and the students engaged in taking such programmes is given in the following tables.

TABLE 1

Simple Responses

Sl. No	Name of the long course	Total No. of Students enrolled	No of respondents
1	Marketing Management	145	25
2	Industrial Purchase and Materials Management	165	30
3	Industrial Management	60	10
4	Diploma in Computer Management	50	10
5	Interior Decoration	190	35
6	Hotel Management	110	25
7	Post-graduate Diploma in Continuing/Adult Education	5	4
8	Diploma in Hospital Administration and Management	6	4
		731	143

TABLE 2

Enrolled Candidates in Different Courses

Sl No	Year	MM			IPMM			IM			DCM			ID			HM			Total			Total enrolment in the year
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
1	1988-89	82	16	98	149	2	151	21	3	24	31	4	35	49	38	87	45	28	73	377	91	468	468
2	1989-90	97	22	119	86	7	93	21	7	28	29	6	35	47	62	109	40	33	73	370	137	507	507
3	1990-91	94	11	105	96	6	102	37	5	42	45	6	51	60	86	146	39	30	69	370	144	514	514
4	1991-92	138	26	164	110	9	119	56	3	59	46	10	56	56	90	146	42	28	70	448	166	614	614
5	1992-93	132	14	146	151	14	165	36	4	40	38	9	47	94	88	182	78	23	101	529	152	681	681
	Total	543	89	632	592	38	630	171	22	193	189	35	224	306	364	670	247	142	385	2094	690	2784	2784

MM = Marketing Management
IPMM = Industrial Purchasing and Material Management
IM = Industrial Management
DCM = Diploma in Computer Management
ID = Interior Decoration
HM = Hotel Management
M = Male
F = Female
T = Total

TABLE 3

Age and Sex Profile of the Admitted Candidates of L T Courses

Name of the Course		Age-group					Total		%	Male %	Female %	Total Male and Female %
		17-20	20-23	23-26	26-29	29 and above						
M M	M	_	90	30	7	5	132	146	21 43	19 38	2 05	21 43
	F	_	11	3	_	_	14					
I P M M	M	_	77	49	18	7	151	165	24 22	22 17	2 05	24 22
	F	_	11	2	_	1	14					
I M	M	_	17	12	5	2	36	40	5 87	5.28	0.58	5 87
	F	_	4	_	_	_	4					
D C M	M	_	14	15	2	7	38	47	6 90	5 58	1.37	6 90
	F	_	8	_	_	7	9					
I D	M	33	29	19	6	7	94	182	76 72	13.80	12 92	26 72
	F	50	21	12	2	3	88					
H M	M	34	76	5	13	_	78	101	14.83	11 45	3 37	14 83
	F	13	5	1	3	_	23					
Total		130	314	148	56	33	681	681	99 99	77 67	22 32	99 97

TABLE 4
Background Educational Qualification

Sl No	Educational Qualification		Courses						Total	Total %	Grand Total	Grand Total %
			MM	IPM.M	IM	DCM	ID	HM				
1	S S.C	M	–	–	–	–	51	26	77	11 30	112	16 44
		F	–	–	–	–	27	8	35	5 13		
2	M S C	M	–	–	–	–	19	26	45	6 60	78	11 45
		F	–	–	–	–	26	7	33	4 89		
3	Graduation B A /B Sc / B Com	M	92	109	34	11	11	24	281	41 26	344	50.51
		F	12	10	3	6	25	7	63	9 25		
4	Post Graduation M A./M Sc M Com	M	10	10	2	4	–	2	28	4 11	42	6 16
		F	1	2	1	3	6	1	4	2 05		
5	B E /B Tech	M	29	29	–	23	10	–	91	13.36	98	14 39
		F	1	2	–	–	4	–	7	1 02		
6	M E /M Tech	M	1	3	–	–	2	–	6	0 88	6	0 88
		F	–	–	–	–	–	–	–	–		
7.	M B.A.	M	–	–	–	–	1	–	1	0 14	1	0 14
		F	–	–	–	–	–	–	–	–		
	Total		146	165	40	47	182	101	681	99 97	681	99 47

TABLE 5

Course Satisfaction and Study Environment Provided

Sr No	Educational Qualification	Courses						Total	Total in percentage
		M M	I P M M.	I.M	D C M	I D.	H M		
1	Excellent	3	2	2	_	5	2	14	10 07
2	Good	12	22	5	9	21	15	84	60 43
3	Mediocre	9	6	4	_	6	4	29	20 86
4	Poor	3	2	1	_	4	2	12	8 63
	Total	27	32	12	9	36	23	139	99 99

TABLE 6

Course Content Adequacy

	Qualification	M M	I P M M	I M	D.C M	I D	H M	Total	Total percentage
	Superior	_	2	2	3	5	2	17	12 23
	Adequate	_	26	6	4	20	20	99	71 22
	Inadequate	2	2	2	5	9	2	23	16 54
	Total	29	30	10	12	34	24	139	99 99

TABLE 7

Values Held by the Students

Value	Courses							Total in
	MM	IPMM	IM	DCM	ID	HM	Total	percentage
Education	18	19	_	8	23	16	83	32 29
Integrity	7	3	1	4	4	7	26	10 11
Love for country	11	14	3	6	12	10	56	21 73
Love for family	10	5	1	5	14	11	46	17 89
Commitment for work	6	9	1	5	10	14	46	17 89
Total	52	52	6	28	63	58	257	99 96

Tables 1 and 2 reveal the enrolment position of different long-term courses offered by the centre across years. The actual available candidates from different courses formed a representative sample for interview and data collection Table 2 further brings to focus the actual enrolments of different offered courses from 1988 to 1993. A steady increase from 1988 to 1993 is exhibited in the table. The highest enrolment has been in I.D course over the years and the highest overall enrolment has been in the year 1992-93 Men have taken the courses of M.M , I.P M.M , I M and D C M. more than women and women have been substantial in the course of Interior Decoration and Hotel Management Overall enrolment has been better in 1991-92 and 1992-93

Table 3 reveals age group and sex-wise enrolment The highest enrolment has been in the age group of 20 to 26 years over the years in long-term courses. Generally in all the L T courses enrolment of men has been more than women except the I.D course wherein the women enrolment has been almost equal over the years and at times even marginally on the higher side The women participation has been about 23 per cent overall in different courses Highly participated courses have been Interior Decoration, Industrial Purchasing and Material Management, Marketing Management and Hotel Management as revealed by Table 3.

Table 4 reveals educational background of the candidates enrolled in different courses The main background qualification of the students enrolled has been graduation (B A , B Sc., and B Com) 50 15 per cent and BE/B Tech 14 39 per cent The graduates of general as well as technical stream find the course more helpful for their career prospects S S C and H.S.C as background qualification participated mainly in Interior Decoration and Hotel Management courses with the percentage of 16 44 per cent and 11 45 per cent Candidates with post-graduate qualification mainly joined I M., M M , I.P M M and D C.M Courses about 70 per cent of them were found in enrolment lists of the Centre as revealed by Table 4. Table 5 reveals the student satisfaction on study environment and course content satisfactions 10 07 per cent candidates felt the courses were excellent contentwise and study environment was excellent. 60 43 per cent candidates felt the content of the course good and helpful and expressed satisfaction. Over the study environment provided 20 8 per cent candidates felt mediocre about the course content. About 8 6 per cent candidates felt the courses poor and were not satisfied with the course content and felt the need for improvement of the content of different courses offered by the centre. Further, Table 6 reveals that 71.2 per cent candidates felt that courses offered were adequate and 12 23 per cent expressed course content to be superior About 16.5 per cent candidates expressed that the course content was inadequate for study

Table 7 reveals values held by the enrolled students of different courses. Education as a value was held by 32 29 per cent people, love for the country was held by 21 73 per cent, love for family as a value was held by 17.89 per cent, commitment to work by 17.89 per cent and integrity as a value by 10.11 per cent people Table 7 further reveals that education and love for the country were two highly acclaimed values by the students. Love for family and commitment to work acclaimed equally by the enrolled candidates of the different courses Integrity as a value was expressed the lowest by the enrolled candidates The value for integrity seems to be diminishing. Students do not seem to attribute value to the integrity value any more

TABLE 8

Short-term Courses Offered in 1992-93

Sl No	Name of the Course	Duration	Fees (Rs)
1	Computer Languages and Courses (Basic, Cobol, Dbase, Fortran IV, System Analysis and Design,Unix & C Microprocessor and Accountancy	2 months to 3 Months	Rs 400 to 500
2	Automobile Engineering	2 Months	Rs 400
3	Scooter, Motorcycle and Moped Repairs	1 Month	Rs 200
4	Refrigeration and Air Conditioning	2 Months	Rs 400
5	Dress Designing	2 Months	Rs 400
6.	Advance photography	1 Month	Rs 300
7	Sales Tax, Income Tax and Central Excise	2 Months	Rs 200
8	Materials Management	1 Month	Rs 200

MAJOR FINDINGS

Table 8 reveals the list of short-term courses run during 1993 Mostly the courses were run during the summer holidays from April to July, 1993. About two thousand candidates were enrolled for different courses. The venue and the class timings were in the morning or evening mostly from 7 A M to 11 A.M. and 5 P M to 9 P M Criteria for deciding the timings have been the suitability to enrolled students of each course All the students (about 70 per ccent) and faculty (about 60 per cent) felt satisfied about the conduct of the short summer courses.

Enrolment percentage of men was more than women in all the courses except Interior Decoration Most of the students joining these courses are young i e between the age group of 18 and 26, mainly with graduate and post-graduate qualifications The majority of the students were from middle class with

monthly earning of about Rs 5,000 The majority of the students had joined these courses for enhancing their job prospects in different areas Mostly students were satisfied with course content and they had expressed after completion of the course they had good chances of getting a better job The majority of the students expressed the need of such courses and satisfaction on the course content taught. About 30 per cent students in different courses were from higher age group, married and employed people

Discussion

The study viewed in the light of continuing education process, the results mark some sort of a novelty. The study indicates that there is a vast potential for continuing education programmes The same need to be offered by universities for the community development The courses need to be carved with area specificity. All the illiterate-literate, qualified in general education or technical education need some kind of additional knowledge, practical knowledge to suit different areas of the economy This additional knowledge can be provided through continuing education programmes by pool of the University resources for community development. The local industry also can be involved for the purpose as the processed manpower will serve the industry locally.

All the studies conducted so far in this area bring to focus the great relevance of the courses offered by such centres for the community These courses are mainly part-time evening courses and provide good services to the community. Most of the students and community members expressed their views for joining and supporting such courses More so the students enrolled in one course exhibited interest in joining other courses offered in future. It shows there is something that interests and fascinates the young and old to join the courses. In a small city like Baroda, there are big and small industrial houses with tremendous need for manpower. The long and short-term courses train the people for these industrial houses and bridges the gap between general education and actual job requirement with induction type field training. The students who complete such courses feel themselves closer to the job market and industrial houses get benefited along with the community in general.

There are some difficulties and problems expressed by the students undergoing the courses but these are mainly due to lack of resources and infrastructural facilities. These inadequacies can be removed mutually by the community and industry. The government also can contribute its share by adopting these university departments, providing funds and infrastructural facilities to serve the local community in better and healthy way In the present day, it is necessary for every student, youth and adult to know certain things over

and above his general qualifications e.g computers, computer languages, management of marketing, sales, purchase, industry, business, hotel, interior etc In addition personal growth oriented programmes e g. development of personality, communication relations, maintenance, etc. Training programmes in such areas shall develop the people and put them on a better footing for competition, life and living. In every job area, there are needs for specific training for induction. These departments can cater to such demands in a better way by utilising the available resources of the University after office hours This will be beneficial for students, youth, adults and the community at large. Such programmes will prove cost effective as well as competitive to privately managed programmes

This type of endeavour will need a cooperative work attitude with a focus on common betterment and welfare The courses offered are of a special nature, aimed to meet the specialised needs of a definite section and level of the population. These courses are essentially knowledge-based besides, they help in the development of skills and abilities. The courses further develop the mind for meaningful and productive use of leisure time The continuing education programmes develop commitment in the educated to the life and society of which they are an integral part. With the result the people develop a better life pattern and contentment and understand life as a learning process

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Socio-Economic Background, Literacy Development and Retention among Female Ex-Learners: A Study*

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INDIAN cultural traditions prescribed rigid sex segregation and a greater restriction on the mobility of women than men The map of literacy shows very wide variation of literacy development among female from area to area in the country and ranges from 86 93 per cent in Kerala to 20 84 per cent in Rajasthan (1991 census) There is also a wide variance in literacy among men and women in different parts of the country, urban and rural and among different social groups National Literacy Mission (NLM) has set ambitious targets for itself · covering 30 million illiterate by 1990 and another 50 million by 1995 The conceptual orientation as manifest in plan documents including National Policy on Education, 1986, are fairly radical; the actual programmes are in reality far more conservative and weak. Women constitute the bulk of illiterate population in India The major obstacles are the problems of drop-out, occupational pressure, guardian's negative attitude towards women education, early marriage, irregular attendance in the Adult Education Centre, absence of satisfactory post-literacy class and follow up programmes, etc As a result a large number of persons who had benefited from Adult Education Centre, have relapsed into illiteracy. The problems of wastage and stagnation are serious in

* The study was supported by Calcutta University during the year 1992-93

case of girls, Government of India is spending on literacy programme on priority basis through National Literacy Mission (NLM) and Total Literacy Campaign (TLC)

Review of Studies

Very few investigators have studied the retention of literacy. Mali (1974) studied the factors affecting retention of literacy among the adult neo-literates. It was revealed that the kind of reading materials used was a significant factor affecting retention of literacy Roy and Kapoor (1975) found that ex-literacy class adults were more susceptible to lapse into illiteracy than school leavers Laharia and Dixit (1981) found that the performance was somewhat better among men than women Seth (1984) in his study revealed that there was a significant relationship between the main occupation of the family and learners attitude of literacy. State Planning Machinery (1985) evaluated National Adult Education Programme (NAEP) in Orissa The study revealed among the learners who completed the course, 60 per cent were able only to read and 54 per cent were able to read and write well While taking review it was observed that very few studies are there on literacy development and its retention among female learners in rural areas of West Bengal One study was found by the Council for Social Development (1982) which studied the achievement of literacy programme at Kidderpore block in Calcutta and found that the achievement of the literacy programme was below average

Objectives of the Study

1 To study the income, occupation and educational status of the female ex-learners and to judge how it affected the retention of literacy among ex-learners
2 To study the extent to which the female ex-learners retained their literacy skill acquired at the Adult Education Centre

Hypotheses

1. The retention of literacy skill depends on the follow-up or post-literacy programme attended by the ex-learners
2 There is significant difference in total achievement score in literacy between families of ex-learners with school-going members and without school-going members
3 The achievement of literacy is independent of the income level of the family of the ex-learners

4 The achievement of literacy is not dependent on the occupation of the family of the ex-learners.

METHODOLOGY

Sample

The sample for the study was female ex-learners who have undergone six months training programme (01 10 90 to 31 04.91) in literacy skill in the Adult Education Centres. Seven villages were selected randomly from four grampanchayats of two blocks (Raina and Khondokosh) of Burdwan district Following thus 166 female ex-learners were selected randomly from twelve Adult Education Centres of the seven villages for the study

Tools : With a view to achieving the above mentioned objectives the following tools were used in this study

1 Socio-economic background — Developed by Sharmistha Chakrabarti
2. Literacy Achievements test—developed by Sharmistha Chakrabarti For rating literacy test, norms, standard of evaluation was adopted in this study as suggested by Dave Committee of National Literacy Mission
3. Home visits, individual interview and discussion with the female ex-learners were undertaken to judge the family background, literacy achievement and its retention and to have first hand experience of detailed information about various constraints faced by the ex-learners

STATISTICAL TREATMENT

For quantitative analysis of data, mean, standard deviation, chi-square were calculated Relative dispersion was found out by calculating co-efficient of variation. Qualitative analysis has been done on the basis of observation made during interviews

DATA COLLECTION

The pilot study was done on twenty female ex-learners, after which the Literacy Achievement Test in reading, writing and numeracy was administered to the main sample in the month of August 1992 i e after one year four months of the completion of their training in Adult Education Centre The ex-learners were personally interviewed The female instructor of the centre was present during the interview The researcher personally collected data with the help of few research workers of District Research Unit, Burdwan and one of her research students. It was a team work

Limitation of the Study

1. The study was limited to female ex-learners in the age of above 16 years
2. Keeping in view the limitation of time and money, and as it was an intensive enquiry including home-visits, the study was limited to two blocks of Burdwan district
3. The correlation between achievement score in literacy and its retention could not be done in this study as the literacy achievement score of ex-learners in Adult Education Centre was not available at the time of study.

Analysis and Interpretation of Results

The average age of ex-learners was twenty three years. It was found that most of the ex-learners were around sixteen to thirty years and very few of them were around thirty one to forty five years and only one learner was sixty years old. Out of 166 ex-learners majority of them (62 per cent) were married, only 33 73 per cent were unmarried, 3% were widows and only two learners were separated from their husband A large majority (89 per cent) of the ex-learners were Hindus and only 11% ex-learners were Muslims. Out of these Hindu ex-learners 73 per cent were scheduled caste comprising Ruidas, Dule, Bagdi, Muchi, Kamar, Bauri, Dom and Mahato Only 16 per cent ex-learners belonged to scheduled tribes and they were all Santhals. Majority of the ex-learners' mother tongue was Bengali except the Santhals (16 per cent) who use their own dialect

Occupation and Income of the Ex-Learners and the Guardians of the Family

It was found that only 26 per cent ex-learners were working They were mainly argicultural labour. Only five ex-learners were maid servants (three in the I C D.S. Centre in village) and two ex-learners were self-employed. The main occupation of the guardians of the ex-learners was agriculture in this study. 49 19 percent guardians of the ex-learners being agricultural labour with land, 37.34 per cent without land, 4.18 per cent were agriucultural labour with other occupation. Only 7 per cent were industrial labour. They were working in rice mill, and 3 per cent of the landless had other occupations comprising mainly of carpenters, tailors, shopkeepers, rickshaw or van pullers

It was found ninety families (54.21 per cent) possess land Among them forty one families (24.69 per cent) have vested land, forty six families (27 71 per cent) have their own land and three families share Barga (Patta) with others. Majority of them work on others land throughout the year Thirty six per cent

of the other family members of the ex-learners were working mainly as agricultural labourers.

It was found that 62 04 per cent families had yearly income between Rs 2,000-6,000) 30 per cent had yearly income between Rs 6001 to Rs 1,200 and only 7 per cent had yearly income above Rs 12,000 It was observed that 87 per cent families have domestic animals such as cow, goat, duck, chicken and buffalo, which are a source of earning for them

It was revealed through the discussions with the ex-learners that their families do not have fixed income throughout the year During the harvesting season i e five to six months in a year they have regular earnings Many of them work on other's land as casual agricultural labour In this sample the main occupation of the ex-learners family was agriculture. Therefore, there is not much variation regarding income and occupation among the learners

It was found that the achievement of the ex-learners in total literacy is independent of income level and occupation of the ex-learners family. (Occupation observed $X^2 = 48.30$, which compared to the tabulated value $X^2_{36,0\,05} = 51$, income observed $X^2 = 39\ 65$ which compared to the tabulated value $X^2_{45\,0\,05} = 49\ 75$). So the null hypothesis No 3 and No 4 hold good in the study.

TABLE I

Total Achievement In Literacy (Reading, Writing, Numeracy)

	Reading		Writing		Numeracy		Total Achievements (Reading, Writing, Numeracy)	
N	Mean	S D	Mean	S D	Mean	S D	Mean	S D
166	5 08	3 82	15.9	11.26	10 83	11 78	30 05	25 46

Table 1 shows that the mean and S.D. of total achievement in literacy test were 30 05 and 25 46 It was found that overall performance of the ex-learners in the literacy achievement was poor The performance in writing and numeracy was very poor. The value of co-efficient of variation of numeracy (108 77) is higher than reading (75.19), writing (70 81) and total achievement in literacy (84 72) So the value of co-efficient of variation of total achievement in literacy is higher than writing and reading There is more variation in the aptitude of numeracy than reading, writing and total achievement in literacy among ex-learners

TABLE 2

Learners Score in Literacy Achievement Test

Scores in Percentage	Total Achievement		Reading		Writing		Numeracy	
	No of Learners	%of Learners	No of Learners	%of Learners	No. of Learners	%of Learners	No of Learners	%of Learners
0 - 50	132	79 51	107	64 45	111	66 86	142	85 54
51 - 60	8	4 81	4	2 40	12	7 22	11	6.62
61 - 70	13	7 83	12	7.22	16	9 63	2	1 20
71 - 80	7	4 21	9	5 42	9	5 52	6	3 61
81 - 100	6	3 61	34	20 48	18	10 84	5	3 01

Table 2 shows that out of 166 ex-learners only 7 82 per cent scored above 71 per cent marks and majority of the ex-learners (79 51 per cent) scored 50 and below 50 per cent marks in total literacy achievement test According to National Literacy Mission (NLM) it was found from the study that only 7 82 per cent female ex-learners were literate and could retain their literacy skill. It was revealed while discussion with the ex-learners that they did not have practice in reading, writing, numeracy skill after completion of the training programme (01 10 92 to 30.04-92) in Adult Education Centre There was no post-literacy classes running by the Centre. So they were in the process of forgetting. Few learners said that they could not attend literacy classes regularly due to work load in the family, fatigue after day's work and few of them have small children also They had to cook and feed them. From the above results the hypothesis No. 1 is upheld

EDUCATION LEVEL OF THE FAMILY

Out of 166 ex-learners only 40 36 per cent ex-learners' family members were attending school and 59 63 per cent ex-learners' family members never attend school

Table 3 shows that there is significant difference at per cent level in total achievement in literacy between families of ex-learners with school going members and without school going members. The Hypothesis No 2 has been accepted from the above result in this study It was revealed through discussion that the ex-learners sometimes sit with their family members when they practice their school lesson They practice reading and writing with their children. So there is a literate environment in their family Though they have not attended post-literacy classes, their performance was better than ex-learners whose

family members did not attend school. Study materials were available to those ex-learners as their children were going to school

TABLE 3

Achievement of Ex-Learners Belonging to Family Members Attending School and not Attending School

Learners	N	Mean	S D.	Mean Difference	Combined S D	T-Value
Family Members attending school	67	33 1	26 4			
Family Members not attending school	99	17	23 2	16.1	24 69	4 66

($t_{164\ 003=165}$ from table)

CONCLUSION

The overall performance in total literacy achievement was very poor. It can be said that only 7.8 per cent ex-learners could retain their literacy skill in this study (i.e after 1 year and 4 months of their completion of training of literacy skill at Adult Education Centre). They scored more than 70 per cent marks in literacy achievement test. Their score in reading and writing was above 50 per cent. The study revealed that 92 16 per cent ex-learners scored below 70 per cent marks of which 79 85 percent scored below 50 per cent marks in literacy test Their performance in numeracy was very poor. A majority of ex-learners (85.5 per cent) scored 50 per cent or below 50 per cent in numeracy It can be said that a majority of the female ex-learners (92.16 per cent) could not retain their literacy skill in this study

The data indicated that the main occupation of ex-learners and their family members was agricultural labour The achievement of literacy of ex-learners was not dependent on the occupation and income level of the family

The performance of ex-learners in total literacy achievement whose family members were attending school was better than the ex-learners whose family members were not attending school. Though these learners did not attend post-literacy classes or follow up programmes, they were exposed to a literate environment in their family as their children were attending school. They had an access to study material which had helped them to retain literacy skill.

It was observed that the major reasons of poor performance were lack of practice of literacy skill after completion of training programme in Adult

Education Centre, irregular attendance in literacy classes, fatigue after day's work, family and occupational pressure Some of the other reasons for irregular attendance were the attitude of the guardians towards the learners education, lack of motivation at home and repeated pregnancies It was found through discussion that few ex-learners were very eager to continue further education Apart from this, the reading and writing materials were not available to ex-learners after completion of the training in Adult Education Centre

Recommendations

On the basis of the results it can be recommended that post-literacy programme for neo-literates are essential. The most important is the availability of written materials at a level easily understandable to the neo-literates These written materials like wall newspapers (a most dynamic educational tool when properly used — involving the active participation of the learners) newspapers distributed at the local level, appropriate books for reading clubs, reading aloud in a reading circle, libraries and the creative writings of the learners themselves (often products of organised writer's workshops). National and regional newspapers carrying special sections containing news and information at the level of the neo-literates should be made available in post-literacy centre. Neo-literates must have opportunities of using writing and calculating in their day to day life activities, community activities etc Neo-literates should participate in cultural activities like essay competition, drama, dance, recitation etc. which should be arranged by the post-literacy centres

The National Adult Education Programme (NAEP) 1978 recommended that the post-literacy and follow up activities form an essential and an integral part of the programme. It suggested that before the conclusion of the 9 to 10 months programmes at an Adult Education Centre, preparations have to be made for the organisation of continuing education centres The National Policy on Education, 1986 also recommended that a large number of adult education and continuing education schemes should be implemented through various ways National Literacy Mission recommended that an institutional arrangement for post-literacy and continuing education will be done by setting up a large number of Jana Shikshan Nilayams (JSN) or centres for post-literacy and continuing education The researcher felt that after completion of training in literacy centre, the neo-literates should immediately join post-literacy or continuing education programmes run by Adult Education Centre under the same roof

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Trends in Elementary School Science Education: A Survey

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A key problem, throughout the world in improving elementary school science, centres around the questions "What should we teach? What do we want children to learn? How should we teach?" It compels us to examine first the question of what we mean by science. Do we regard it as a body of knowledge to be discovered by scientists and transmitted to our children? Or do we regard it as a system of enquiry, a way of looking at the world? Or does our philosophy embrace both these positions? Our answers to such questions will obviously colour the kind of science education which we envisage for our children and which we translate into practical action in the form of curricula, materials, teacher training programmes and classroom teaching If we look back at some of the major curriculum projects of the last two decades taken up by various countries, it is clear that each had a philosophical position with regard to this issue Two extreme positions can be called, "contents oriented" and "process oriented" Here process means the intellectual skills and the attitudes required to find things out or approach problems scientifically Most of the recently produced curriculum programmes do not lie at the extreme ends of the content-process continum Whatever the case may be, it must be accepted that content has to be a vehicle for process and attitude goals. It seems that the criteria to be used for selecting content are often one or more of the following.

— that it is clsoe to children, engaging their interest and curiosity
— that it particularly lends itself to enquiry method and so helps to promote

process skills

— that it develops concepts which help children understand their environment and are needed for science studies in subsequent education.

Choosing topics from the children's environment is fine in many cases, but it has to be remembered that nature in the law is not simple. The factors affecting phenomena encountered in everyday life are often complex Not all subject-matter which is relevant to everyday lives can be explained using science processes — take matters of safety, some aspects of the working of the human body, the movement of the sun, moon and stars Similarly, it is important to include content which introduces children at an early age to technology

Unfortunately, the selection of content is a subject that often squeezes out the discussion of process. Achieving process objectives depends on how rather than what activities are pursued The "how" is perhaps even more vital to the realization of the goals of science education than the "what", since it is possible to cover content without using science processes, but it is not possible to use processes without some content. Thus, attention to the way of teaching is essential if elementary science is to meet the expectations which are claimed for it There have been various attempts worldwide to constantly improve the situation of science teaching at the elementary level In what follows, we describe the various projects and discuss their impact on improving science education in different countries of the world

Elementary Science Education in the Developed Countries

The reforms in elementary science education first took place in the Western countries. Some of the representative countries are discussed below.

(a) The United States

In the 1960s, from the onset of curriculum reform in the United States many of the new programmes for elementary science developed a range of educational media including student texts, record books, kits and apparatus as an integral part of their material First among the new programmes were the federally funded Elementary Science Study (ESS), Science — a Process Approach (SAPA), and Science Curriculm Improvement Study (SCIS), diverse in their emphasis on concepts, phenomena and processes that might make up a science course but all in agreement that science should be a child-centred, hands-on, open inquiry approach learning activity ESS followed an instructional approach — it described possible activities and left the day-to-day procedures to the discretion of individual teachers. It emphasised the use of simple, everyday materials. SAPA stressed the child's practice with the

processes of science. Less emphasized were scientific concepts and phenomena SCIS emphasized that children should engage in investigations, apply the modern scientific point of view, have direct experiences with material, phenomena, engage in discussions of their ideas and observations become aware of the tentative natures of scientific truth In SCIS material, a three-phase learning cycle viz. 'exploration', 'invention' and 'discovery' was proposed Equipment/kits were developed as an integral part of many of the SCIS Units

In the 1970s, the programmes continued to follow the child-centred, hands-on, inquiry approach and although, like earlier programmes, they differed slightly in the emphasis on concepts, processes with materials best suited in order to achieve their ends, many similarities remained For example, the three programmes — Exploring Science, Science. People, Concepts, Processes; and Science — Understanding Your Environment— each presented a checklist of processes very similar to that of SAPA One change was that new student texts were produced accompanying teacher guides

A national survey found that 70 per cent of school districts did not use any of the National Science Foundation sponsored curriculum material ESS, SAPA and SCIS. However, these programmes have now been supplemented by a wealth of additional material and they have now made a significant impact Long-term and collaborative activities to define appropriate and attractive content for school science are underway.

(b) The United Kingdom

The main curriculum development projects in elementary school science began with the Nuffield Junior Science Project sponsored by the Nuffield Foundation The emphasis of this project was child involvement in inquiry and discovery and the project attempted to give the teacher the greatest flexibility in order to achieve that end. No pupil materials, either texts or kits or apparatus, were developed, the emphasis was on the production of printed material for the teacher Although this unstructured approach gave creative and enthusiastic teacher guidance, in practice many teachers required more structured learning materials It was partly to meet this need that the Science 5 - 13 Project was established. The role of this project was to assist teachers help children learn science through discovery methods. Detailed specific objectives for children learning science based on the ideas of Piaget were formulated It still remained for individual teachers to select the experiences suitable for their own children. In 1973, Progress in Learning Science was established to provide teachers with help with the process of making decisions about activities and approaches. After many years of producing teacher material only, attention is now turned to producing pupil material in response to the many requests from teachers.

A survey of elementary education in England found that many schools do not have programmes of work in science In spite of efforts such as national curriculum projects and support given through local authorities and publications, there has been little impact on the majority of schools in the U K and little progress in the teaching of science in elementary schools

(c) Australia

The wave of curriculum reform also swept across various states of Australia. Curriculum guides for elementary science were produced by the Education Department of Victoria. The underlying philosophy was very close to that of the Nuffield Junior Science. There was no structure to guide the teachers and no pupil material, but consisted of a set of Teacher's Source Books and Student Workbooks. Perhaps the most interesting modification undertaken in Australia in order to take local needs into account is that described by Davis *et al.* In the Northern Territory, traditional aboriginal learning strategies have been taken into account alongside the process skills of Western Science In recent years, considerable collaborative work has been undertaken by Commonwealth State and Territory Governments through the Australian Educational Council to develop a national perspective to school education For this purpose, the Prime Minister's Science Council was established in 1989 as part of a range of measures to strengthen policies and programmes for science A national curriculum agency, Curriculum Corporation has been established to facilitate greater efficiency and effectiveness in curriculum development and dissemination through the sharing of knowledge and scarce resources

(d) France

Elementary science education has been reformed in successive stages since 1969 in this country The initial measures taken at that time replaced an extremely rigid and compulsory timetable with a much more comprehensive and flexible one The two 45 minutes science lessons per week were incorporated into a much broader course called "general cultural activities" Between 1969 and 1977 the situation deteriorated due to the absence of any decision as to what "general cultural activities should cover" Project "Introduction to Science" as part of General Cultural Activities was started recently The starting point is provided by free exploration of the environment, activities taken on for pleasure. The activity of problem-solving constitutes a detour from free exploratory activity and often needs to ignore practical consideration Generalization and structuring activities are designed in the next stage They consist particularly in checking the result of a specific exercise against information supplied in textbooks or by comparing different experiments, before arriving

at general abstract conclusions. Keeping a record in the form of a table of objectives and activities represents the teachers planning and evaluation activity in practical terms These tables are passed on from class to class to ensure continuity and repetition

Elementary Science Education in Developing Countries

We take stock of the progress of science education in the last two decades in a few developing countries here.

(a) Brazil

From 1963 onwards, several curricular projects have been developed e g 'Initiation of Science' emphasizing experimentation and giving students the opportunity to handle material, to observe phenomena directly and to draw their own conclusions. But later this methodology was abandoned. From 1972 on, other projects were developed, sponsored by the science project created by the Ministry of Education, including the Teaching of Science Project (PEC) and the Environmental Science Project. However, up to the present, bureaucratic obstructions have prevented these materials from being commercially published. A series of kits have been elaborated by the Brazilian Institute of Education, Science and Culture. In a survey, it was verified that in Brazil, one of the most deficient aspects of the teacher's training programme related to the pedagogical form of the presentation of the disciplines, to their structure and development emphasizing content, not always organically articulated and seldom stressing thinking abilities and teaching strategies favouring students' growth In order to implement student-centred activity-based approach, best methods to progressively introduce science concepts at the appropriate age and developmental levels should be identified The appropriate resource materials in the form of teacher's handbooks will go a long way to help the teachers

(b) Indonesia

The Development School Project is a long-term programme started by the Ministry of Education and Culture since the beginning of 1969 After considering several alternatives in the light of existing educational problems and constraints, it was finally decided to use the modular system of instruction as the teaching learning strategy in this project. Through this system of instruction, it is hoped that the quality of the students' education will not depend too much on the availability of good teachers This system stresses the importance of self-learning, and enabling the students to learn at their own pace. Mastery learning as a strategy is built into the modular system A module consists of teacher's manual, student activity booklet, student worksheet, answer key for worksheet

items and student assessment sheet Recently, an elementary science kit has been produced by a workshop under the project for development and distribution of school equipment. The survey indicates that the students became more active in learning process and their courage to ask questions increased. In using the modular approach, it was anticipated that the role of the teacher would be changed from that of a dissemination of information into that of a manager and organizer This change was quite difficult for the teacher.

In this country, the modular approach is a tool to effect the change in the elementary science education Here also the training of teachers in this direction is very important

(c) Bulgaria

From 1973 onwards, the reforms were based on the most modern and progressive concepts about the objectives and tasks of instruction in the basic sciences, natural sciences included, and about the contemporary state and development of these sciences on a world scale, taking account of the specificities in the social and economic development of Bulgaria The school science for the age group 7-11 years consists of natural science and biology Biology, chemistry and physics as independent subjects are introduced for children in the group 11-13 years. Instruction in the natural sciences makes use of lessons, excursions and laboratory and practical exercises in different ratios to one another. The introduction of new school content is accompanied by experimental testing of its efficacy, involving pedagogical experimentation in certain schools The efficacy is established by oral tests, control exercises and other tests and inquiries, the criteria used being the knowledge, skills and attitudes of the pupils In addition, discussions are held at the end of each school year on the qualities of the new textbooks, exercise books and visual aids in the individual districts throughout the country attended by the teachers of all schools. Recommendations for improvement are sent to the Ministry of Education, to the authors and to the respective publishing bases. They are used in adopting measures for further improvement. Revision of the textual material is done every two years, in accordance with the latest advances in science and teaching methodology

(d) Arab States

Science constitutes an integral part of the elementary curriculum in the Arab states During the past decade, the region has witnessed a wave of curricular developments which included primary science. Faced with a shortage of adequately trained teachers in the Arab states, a project was started with the purpose of training the teachers in appropriate skills and competencies that are

needed of elementary school science teachers. The exercise, thus far, has revealed that much more research needs to be performed to establish valid relationships between classroom instruction and student achievement It is a long-term project necessitating considerable manpower and resources.

(e) Africa

Science Education Programme for Africa (SEPA) had created fifty-two African Primary Science programmes (APSP) Units by producing a Handbook for Teachers of Science and Source Book for Science Teachers' Trainers. Embedded in these materials was the deliberate attempt by the developers to shift the classroom transactions from rote to meaningful learning One of the greatest challenges facing educators in the African continent is the need to make the transition between the wholesale use and acceptance of imported books and that of creating appropriate instructional units oriented towards local environment conditions Ministries of Education throughout this continent have set up Curriculum Development Centres which are united by the African Curriculum Organisation (ACO) One of the aims of these Centres is to make education more immediately relevant through the production of a variety of locally oriented curriculum materials and aids for the use of teachers. During teacher training following skills are aimed at for improvement.

1 Questioning skills
2 Skills in translating syllabus topics into instructional activities.
3 Skills in improvising materials
4 Working fruitfully with children.
5 Sensitivity to the cultural context

Helping teachers to gain mastery of these skills cannot be a single shot affair If teachers are to implement new ideas gathered during training, some collaborative programmes between the Ministry of Education and the teacher training colleges are needed Efforts are very much going on in this direction

(f) India

In the last two decades science education at elementary school level in India has also undergone major changes. Major reforms have been carried out by the National Council of Educational Research and Training, New Delhi, an advisory body for school education of the Ministry of Human Resource Development in collaboration with its states' counterparts. In the sixties, Science Education Programme (SEP) was started with the help of UNESCO and UNICEF for reorganisation and expansion of teaching of science throughout the school stage in India Under this programme, new instructional material comprising of syllabus, General Science Teachers' Handbook, textbooks,

primary science kits, etc were developed. The philosophy underlying the elementary science was directed towards a greater participation of the children in active learning experiences There was greater emphasis on the process of science rather than content. Science was taught at the upper primary stage as separate disciplines of physics, chemistry and biology on the recommendations of the Indian Education Commission (1966)

In the mid 1970s, the elementary science curriculum approach was modified to include environmental studies at primary level and integrated science approach at the upper primary stage The survey done by NCERT in 1985 regarding the curriculum load indicated that the curriculum load was not so much a problem of curriculum development as that of perception and management, accentuated by resource constraints. Various factors like lack of essential physical facilities and academic inputs, lack of pedagogical innovations, poor quality of instructional materials, inadequate preparation and orientation of teachers, and the domination of public examination were found to be responsible for depriving the pupil of the joy of learning A significant development after that had been the articulation of a national system of education based on a common educational structure, a national curricular framework and minimum levels of learning for each stage of education. The main thrusts were an emphasis on the development of human resources, broad-based general education, a common scheme of studies, common core component, provision for flexibility in terms of selection of content, emphasis on child-centred and activity-based process, introduction of continuous and comprehensive evaluation, provision of essential facilities, etc. Curriculum was developed accordingly Science kits were designed and developed. However, the transaction of the curriculum is being done in the old fashion way There are a number of problems in the way of practising the child-centred, activity-based approach. Namely, the problem of number of people speaking 16 major languages, problem of resources supply where majority of schools are in poor physical condition and have few efficient trained teachers and appropriate teaching equipment. A proper approach is needed to suit the conditions of a particular region after researching the various factors.

Success or Failure

The success or failure of the science education programme at the elementary stage can be considered at two levels. We can consider the extent to which the material is used by the teachers and as and when used, whether, the desired objectives are being achieved. The survey reports in the different parts of the world points that too much emphasis on the unstructured curriculum resulted in the failure in the developed countries Whereas in the developing countries,

too much emphasis on the structured curriculum having focus on facts and concepts also did not bring about desired results Generally speaking the curriculum reform in elementary service has failed and a significant percentage of students still lack experience with hands-on inquiry learning Main course, as evidence points out, is due to lack of proper pre-service and in-service training to provide for teachers what they so frequently lack at present, experience with inquiry skills, a basic understanding of science concepts, and above all, confidence. Lack of resources is also one of the main causes of the failures, at least in developing countries.

Future

There is no doubt about the relevance of the objective of science teaching to develop scientific temper and attitude in the students in the times to come via the child-centred activity based approach but in order to achieve it in the real situation, specially in developing countries, a balanced student and teaching material consisting of structured and unstructured part having relevance to the local needs based on research would be urgently required It would require a structure for the teachers to assist them by providing for them a logical flow of ideas and suggestions from children's activities, a core of materials which enable them to arrange for children a series of worthwhile learning experiences in science. Production of materials will not, itself, improve teaching and it is important to see that help is given directly to the teachers, bringing them into the planning, development and evaluation wherever possible and providing on-the-job support through a subject adviser, inspector, or mobile teacher training system, a system of teachers' centres. It is the experience of many countries, both developed and developing, that this form of in-service training is what brings about zeal and worthwhile change in schools

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Teachers' Awareness of Mathematics as a Discipline

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AMONGST the hitherto known domains of human endeavour, mathematics stands out as one which has never been a well planned systematised structure consciously organised as a single whole nor a randomly ill-contrived haphazard conglomeration of all asserted, analysed or proved statements and propositions. The spectacular fringes appearing in the overall spectrum as different streams and their diverse ramifications, though unique and distinct as constellations of facts and concepts, principles and propositions, theories and constructs, share some commonalities in terms of the specialities and peculiarities that qualify them a position in the overall spectrum It is these integrating commonalities in the context of nature and essence of this discipline coupled with its distinct epistemology that entitles in a unique position in the galaxy of human pursuits and that needs to be comprehended by teachers entrusted with a dual responsibility that of transmitting the intricacies of this discipline to the budding generation and pursuing further research with respect to its content and methods. The present problem arises out of the researcher's curiosity about the extent to which the post graduate practising teachers expected of laying the foundations of the classicalities of this discipline, are themselves aware of its nature and essence— the express aim being the study of the impact and implications of this awareness on their teaching of the subject, which the researcher proposes to undertake next in the sequence.

The Problem and Its Delimitations

The Areas of Investigation

The problem being that of inferring the teachers awareness of Mathematics as a discipline, the researcher delimited the awareness of Mathematics as a discipline to the following areas

1. The Nature of Mathematics (The nature of basic assumptions i e axioms and postulates and their role in the structure of mathematics. The nature of mathematical proof etc.)
2. The Foundations of Mathematics (Familiarity with the various schools of thought—logistic, formalistic, institutionistic and their fundamental assumptions)
3. The ontological and epistemological assumptions regarding mathematics (The nature of various positions explicating the existence in Mathematics—If Thenism, Postulationism, Carnap's Theories etc and the various positions regarding the nature of mathematical knowledge—Fictionalism, Skepticism, Godel's views and the empirical nature of mathematical knowledge etc.)
4. Metasystems (The properties of independence, completeness, consistency and equivalence etc)
5. Mathematics and Reality (The similarity and difference between the phenomenal reality and the nature of Mathematical reality
6. Concepts basic to modern mathematics (Function, Limit, Number, Set etc)
7. Turning points in the development of Mathematics, especially modern mathematics
8. The integrating elements in the diverse ramifications of mathematics

The Population and the Sample

Keeping in view the nature of the problem, only Post Graduate Teachers, that is, those having at least Master's Degree in the discipline and teaching at the senior secondary level were chosen for the investigation Seventy-two teachers were approached for the study out of which only fifty obliged the researcher The sampling was stratified incidental The following was the break-up of the responses obtained

Schools	No of Teachers Approached	No of Teachers Responded
Public Schools	24	21
Aided Schools	24	12
Government Schools	24	17
Total	72	50

The Objectives of the Study

The following were the specific objectives of the problem .

1 Studying the teacher's comprehension of the nature of mathematics.
2. Inferring the teacher's awareness of the foundations of mathematics.
3. Investigation of tachers' position regarding the nature of inquiry in mathematics
4. Appraisal of teachers' conception of mathematical reality.
5. Evaluating teachers' knowledge of the turning points in the history of development of mathematics
6. Comprehension of teachers' knowledge of the concepts basic to modern mathematics.
7 Inferring the teachers' awareness of the existence of integrating elements in the different streams of mathematics

METHODOLOGY AND PROCEDURE

The Tools : An Outline of the Nature

Two schedules were used as means of collecting the desired information. The first schedule was supposed to act as a prelude to the next seeking detailed investigation The questions included in both the schedules were thought provoking and open and did not anticipate unique answers The schedule consisted of ten questions of a general nature while the second aiming a deeper probe consisted of thirty. The interviews/discussions were held, wherever necessary, to clarify the subjects' position regarding the areas of investigation detailed out in the preceding section.

Administration of Tools

After the necessary revision of the schedules following a try out, the first schedule was administered first and the subjects were asked to return it within seven days following which the second schedule was administered. The

responses to it were sought within a fortnight The responses were studied carefully and the unclear, vague and absurd responses were singled out for seeking further clarifications through the interview The introspective reports from the subjects were also sought which could reach the researcher only occasionally

Analysis of the Data

The Scheme of Analysis

The nature of the problem being descriptive, the data analysis involved categorisation of the subjects' responses into various operational/hypothetical categories.

The hypothetical categories were formed beforehand on the basis of the possible responses which the subjects would make to each itme under consideration, whereas operational ones were formed after going through the responses The subjects' responses to each individual item were carefully read, the gist of the responses inferred and the responses put into the relevant categories, unless they were of an exceptional type, not anticipated earlier These exceptional ones were carefully studied and put into the special categories wherever necessary

Systematic Analysis of Schedule A

This schedule was analysed itemwise. The following tables were the outcomes of analysis For Tables 1 to 3, the response categories were made before getting the feedback whereas for the others 4 to 7, the categories emanated out of the subjects responses

Table 1

Response Analysis of the Enquiry Regarding the Subjects' Opinion about Mathematics

Response categories	No of Cases	% of Cases
(A) A Utilitarian Enterprise		
(a) (i) Useful to Other Subjects	2	4%
(ii) Useful in Daily Life	Nil	-
(b) The Functional Utility for the Training of Mind		
(i) Sharpens the Intellect	Nil	-
(ii) Disciplines the Mind	Nil	-
(iii) Helps in Independent and Logical Thinking	2	4%
(B) Attributes of the Nature of Mathematics Emanating Functional Utility, that is		

	(i) Abstract	Nil	-
	(ii) Exact	9	18%
	(iii) Logical	27	54%
(C)	Popular Definitions	5	10%
(D)	Enumeration of the Essence of its nature		
	(a) Deals with Variables	Nil	-
	(b) Has a Format	Nil	-
	(c) Is Analytical in Nature	Nil	-
(E)	Expressing Alliance with any of the Foundational Schools	Nil	-
(F)	Others	5	10%

TABLE2

Response Analysis of the Enquiry Regarding Significance of Mathematics

Response Categories		No of Cases	% of Cases
(A)	Utility	Nil	-
	(a) Useful in Daily Life	Nil	-
	(b) Useful for Science and Technology	18	36%
	(c) Functional Utility for Training of Mind	26	52%
(B)	Aesthetics	Nil	-
(C)	Mental Activity with Emphasis on the Elements of the Nature of Mathematics	2	4%
(D)	Others	4	8%

TABLE3

Response Analysis of the Enquiry Regarding the Difference between the Nature of Pure and Applied Mathematics

Response Categories		No of Cases	% of Cases
(A)	Enumeration of Areas	3	6%
(B)	Theory versus Application in Research, Science and Technology	41	82%
(C)	Discerning on the Nature of Mathematical Theory Substituting Constants for Variables	Nil	-
(D)	Others	6	12%

TABLE 4

Response Analysis Regarding the Relation between the Different Streams of Mathematics at the School Stage

Response Categories	No of Cases	% of Cases
(A) Accept Interrelation but Can't Specify	39	78%
(B) Accept Interrelation and Can Specify at Least One	5	10%
(C) No interrelation	2	4%
(D) Others	4	8%

TABLE 5

Response Analysis about the Inclusion of Mathematics in Basic Sciences or Accepting their Separate Identity

Response Categories	No of Cases	% of Cases
(A) Can be included in Basic Sciences	10	20%
(B) Maintains a Separate Identity	35	70%
(C) Others	5	10%

TABLE 6

Response Analysis about the Difference between Mathematical Reality and Phenomenal Reality

Response Categories	No. of Cases	% of Cases
(A) Difference is There and Can Specify	2	4%
(B) Difference is There but Can't Specify	29	58%
(C) No Difference	13	26%
(D) Not Clear	6	12%

TABLE 7

Response Analysis of the Enquiries Regarding the Kind of Activities Helpful in Motivating Student to Study Mathematics

Response Categories	No of Cases	% of Cases
(A) Relating Mathematics to Daily Life	31	62%
(B) Arranging Mathematics Quiz and Puzzles	5	10%
(C) Arranging Extra Coaching and Remedial Instruction	3	6%
(D) Teacher's Active Participation	1	2%
(E) No Clear Reaction	10	20%

TABLE 8

Response Analysis of the Teachers' Knowledge of the Developments in the Evolution of Geometry since Euclid

Response Categories	No of Cases	% of Cases
(A) Completely Ignorent (No Response)	21	42%
(B) Vague Responses	19	38%
(C) Could Mention a Few	10	20%

TABLE 9

Response Analysis of the Teachers' Opinion about the Role of Mathematics in Improving Social or Cultural Relations

Response Categories	No of Cases	% of Cases
(A) Helps in Improving Social and Cultural Relations	27	54%
(B) Mathemamtics Plays No Role	11	22%
(C) Absurd/No Response	12	24%

TABLE 10

Response Analysis of the Queries Regarding the Subjects' Readings in the Field Other than the Textbooks

Response Categories	No of Cases	% of Cases
(A) Could Mention Few	4	8%
(B) Could not Mention Any Except Textbooks	15	30%
(C) Could not Mention Any	31	62%

Systematic Analysis Of Schedule B and Supplementing Interview

The analysis of schedule B was carried out categorywise and not itemwise The items probing one specific aspect of the area of investigation were collected and the responses taken account of collectively The interviews were conducted as a supplement to schedule B with the purpose of clarifying the subjects' position regarding their vague or ambiguous responses to the items in the schedule B. Clarifications were sought wherever necessary The analysis of the data resulted in the following eight tables.

TABLE 11

Response Analysis of the Enquiry Regarding the Nature and Foundations of Mathematics

Specific Aspects Probed	Response Categories Emerged	No of Cases	% of Cases
(A) Difference between Postulate and Axiom	(a) No difference	36	72%
	(b) Can specify the difference	1	2%
	(c) Accept difference but can't specify	4	8
	(d) Absurd/No Response	9	18%
(B) Dependence of Mathematics on Assumptions	(a) Maths can be developed without relying on axioms	13	26%
	(b) Can't be developed without axioms	37	74%
(C) Feasibility of Dropping an Axiom Basic to Any Mathematical System	(a) Can't be dropped	39	78%
	(b) Can be dropped	5	10%
	(c) No Response	6	12%
(D) Developing Mathematics without Relying on Axioms	(a) Does not entirely depend on assumptions	34	68%
	(b) Does depend on Axioms Completely	7	14%
	(c) No Response	9	18%

TABLE 12

Response Analysis of the Investigation Regarding the Subjects' Awareness of the Various Ontological and Epistemological Positions Regarding Mathematics

Specific Aspects Probed	Response Categories Emerged	No of Cases	% of Cases
(A) Whether Mathematical Entities are Well Defined	(a) All Mathematical entities are well defined	13	26%
	(b) All are not well defined	33	66%
	(c) No/Absurd Response	4	8%
(B) The Grounds on which Mathematical Propositions are Accepted	(a) Accepted on the basis of application	13	26%
	(b) On the basis of verifiability of proof	15	30%
	(c) Absurd/No Response	22	44%
(C) Challenging of the Mathematical Propositions	(a) Can be challenged, if there is a flaw	44	88%
	(b) Can never be challenged	6	12%

(D) Method of Enquiry in Mathematics	(a)	Different from that of Sciences	8	16%
	(b)	Same as that of Science	20	40%
	(c)	Absurd/No Responses	22	44%
(E) Role of Figures in Proving Propositions	(a)	Clarify concepts and help in better understanding	38	76%
	(b)	Accuracy in drawing figures helps in proving the propositions	12	24%

TABLE 13

Response Analysis of the Subjects' Responses about the Nature of Enquiry in Mathematics

Specific Aspects Probed	Response Categories Emerged		No of Cases	% of Cases
(A) Whether Mathematics can be Developed without Relying on Axioms	(a)	Can't be developed	37	74%
	(b)	Can be developed	13	25%
(B) Whether any of the axioms basic to any Mathematical system be dropped	(a)	Can't be dropped	39	78%
	(b)	Can be dropped	5	10%
	(c)	No Responce	6	12%
(C) Relation between Algebra and Geometry	(a)	Both Branches of Mathematics	38	76%
	(b)	Algebra deals with numbers, Geometry with figures	8	16%
	(c)	Algebra is theoretical, Geometry Practical	4	8%

TABLE 14

Response Analysis Regarding the Investigation on Mathematics vis-a-vis Ordinary Reality

Specific Aspects Probed	Response Categories Emerged		No of Cases	% of Cases
(A) Conveying Subjects' Perception of Mathematics to a Layman	(a)	Not possible as numerical ability is a must for comprehension	25	50%
	(b)	Can do partially and to some extent	12	24%
	(c)	Only mathematician can understand mathematics	2	4%
	(d)	Can do so by relating Mathematics to daily life	11	22%

TABLE 15

Response Analysis Regarding the Concepts Basic to Modern Mathematics

Specific Aspects Probed	Response Categories Emerged	No of Cases	% of Cases
(A) Difference between Accuracy and Precision	(a) No Difference	21	42%
	(b) There is a difference, can't communicate	5	10%
	(c) Can communicate the difference	1	2%
	(d) Absurd/no response	23	46%
(B) Difference between Mathematics and Statistics	(a) Statistics a branch of Mathematics	40	80%
	(b) No difference between the two	5	10%
	(c) There is a difference	3	6%
	(d) Absurd/No Response	2	4%
(C) Whether newer concepts succeed the earlier ones in Mathematics	(a) Yes they succeed the earlier ones	25	50%
	(b) Only in specific cases	3	6%
	(c) Ambiguous/Absurd Responses	22	44%

TABLE 16

Response Analysis Regarding the Teacher's Awareness of the Turning Points in the Development of Mathematics

Specific Aspects Probed	Response Categories Emerged	No of Cases	% of Cases
(A) Significant Developments in the History of Mathematics	(a) Completely ignorant	20	40%
	(b) Incorrect/Absurd answers	22	44%
	(c) Could enumerate some.	8	16%
(B) Developments leading to Unifying Mathematics	(a) Completely ignorant	46	92%
	(b) Could enumerate few	4	8%
(C) Significance of the Study of History of Maths, vis-a-vis perception of structure	(a) Helps developing interest insight	30	60%
	(b) No/Absurd Response	20	40%

TABLE 17

Response Analysis Regarding the Teacher's Awareness about the Integrated Structure of Mathematics

Specific Aspects Probed	Response Categories Emerged	No. of Cases	% of Cases
(A) Concepts and Elements Common to all Branches of Modern Mathematics	(a) Accept the existence of such elements	30	60%
	(b) Are ignorant	12	24%
	(c) No/Absurd Response	8	16%
(B) Relation between Different Branches	(a) All are branches of Mathematics	22	44%
	(b) Some are theoretical others practical	7	14%
	(c) No/Absured Response	21	42%
(C) Common Ideas and Assumptions Underlying all Branches of Maths	(a) Are aware of it	9	18%
	(b) Oblivious of any such assumptions	18	36%
	(c) No Response/Absurd Response	23	46%

INTERPRETATIONS AND CONCLUSIONS

The analysis of the data and the observations made by the researcher while conducting interviews and while going through the subjects' responses from the schedules, call for presenting the observations and conclusions under the three major heads as follows

1. Conclusions from an overall view
2. Catgegorywise conclusions drawn from the data obtained by two schedules and the interview taken collectively.
3. The overall conclusions

Conclusions Drawn from an Overall Observation

During the course of the interviews and discussions and partially on the basis of a general look on the subjects' responses registered in their feedback, the following points surfaced as conclusions from the overall observation. These were not anticipated beforehand but are important to mention

1. Very few teachers seemed to be sensitive in their perception about the intrinsic worth of ideas and expressions. Most of them view necessity to be the mother of invention.
2. Mathematics teachers, by and large, are obhvious of the nature of enquiry in mathematics and find themselves in a tight corner when

asked to comment on such issues of immense importance They seem to have never given a thought to the epistemological issues in mathematics While most of them confess their ignorance, a few consider these issues to be good for nothing as a defence for their bankruptcy in this field

3 The reading list of Mathematics teachers is very poor. Most of the subjects could not even mention a single name of any book they enjoyed in Mathematics other than the textbooks Strangely enough, some three or four teachers mentioned Manjeet Singh and P K. Garg as their extra readings This, in view of the fact that teachers are not only entrusted with the task of transmitting the knowledge to the coming generation but are also expected to a great extent to make contributions to their subject areas, is a point of serious concern

4. A great deal of contradictions were observed in the responses made by almost every teacher to different items in the schedules.

5. Teachers' qualifications seemed to have no impact on their awareness of the discipline Even the very experienced and highly qualified ones made absurd responses

6. It was mostly found that the responses from the same school were alike. The investigator could not find any reason for a similarity in thinking amongst the teachers. In one case the two responses were absolutely alike It was clear that either one had copied from the other or the two and written the answers together.

Categorywise Conclusions Drawn from the Data Obtained by Two Schedules and the Interview taken Collectively

Categorywise specific conclusions are as follows :

1 *The Nature and Foundations of Mathematics :* Teachers are not aware of the nature and foundations of Mathematics They are confused even about the basic ideas with which they have been interacting over a length of time. Many of the respondents felt that mathematics was not dependent on axioms. Others did not see any difference between a postulate and an axiom.

2. *The Ontological and Epistemological Positions regarding Mathematics* . Teachers, in general, are ignorant about the nature of enquiry in mathematics In fact most of them confound the nature of enquiry in mathematics with those in the basic sciences They are, largely, ignorant about the grounds on which mathematical propositions are accepted. A large number of them in the sample consider

mathematics to be the manipulation and jugglary of symbols and expressions They have inadequate insight and wrong notion about the epistemological basis of mathematics

3 *Metasystems* . A confusion prevails amongst teachers on this issue Most of them seem to have a correlational aspect of mathematics which is not clearly manifested Many of them feel that some sort of a relation exists between the different streams of mathematics, even though they are not clear about the type of relation. A large number of them are of the opinion that any of the axioms basic to any Mathematical system can be dropped, as assumptions do not play any significant role in mathematics. There are very few who are aware of this important aspect.

4 *Mathematics and Reality* . Only a few teachers know the difference between the mathematical reality and phenomenal reality and appreciate the nature of mathematical reality This is because most of them are unaware about it and confound mathematical reality with the phenomenal one to a great extent

5. *Basic Concepts* Leaving aside a few exceptional cases, most of the teachers are not even clear about the basic concepts in mathematics They make correct responses but incidentally The inconsiency and contradictions in their responses are a proof of this Most of the tachers do not know the difference between Mathematics and Statistics and are confused about accuracy and precision Nearly half of them consider the newer concepts and theorems succeeding the previous ones, whereas the other half are confused about it

6 *Turning Points in the Development of Mathematics* Most of the teachers are ignorant about the history of development of mathematics They understand and appreciate the role of history in the study of mathematics but are themselves oblivious about the significant developments. Though a majority of them confess their ignorance, a few of them have little knowledge about these important developments.

7 *Mathematics as an Integrated Whole* · Most of the respondents are well aware of the existence of common elements and principles underlying different streams of Mathematics which act as unifying and integrating element Sometimes they contradict their own views, due to lack of clarity and confusion in their comprehension

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Research Abstracts

Socially Useful Productive Work Programme at the Secondary Stage in Himachal Pradesh: An Evaluative Study

BIMAL CHARAN SWAIN

THE Review Commitee (1977) which was appointed to examine the curriculum for the Ten-Year School, preferred the term 'Socially Useful Productive Work' (SUPW) to 'Work Experience' (WE) and recommended that Socially Useful Productive Work (SUPW) be an integral part of the curriculum at all stages of school education In the light of the recommendations of the Committee SUPW was introduced at the school level in different States and Union Territories in India.

For the successful implementation of any new programme, plan or scheme, it is necessary that some sort of investigation should be undertaken, so that the verifications of the programme can well be perceived and remedial measures taken, wherever necessary There are many constraints which are likely to hinder the effective implementation of the SUPW programme. In this context proper evaluation of SUPW programme can identify the weaknesses, deficiences, effectiveness and shortcomings of the programme implemented, so that corrective steps could be taken in time. It was also felt that research effort so far on SUPW has been sporadic and rather unsystematic in India in general and Himachal Pradesh in particular. Therefore, an essential exercise was found

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necessary taking into consideration the above points

Objectives of the Study

The following were the objectives of the present study:

1. To study the development of the concept of Socially Useful Productive Work in the historical perspective.
2. To study the functioning of the Socially Useful Productive Work Programme at the secondary stage in Himachal Pradesh in terms of: Nature of the subject, criteria adopted for selection of SUPW activities, SUPW activities introduced, community service/social service performed by the students, physical facilities available, teachers teaching SUPW activities, provision of in-service training and refresher courses for teachers, availability of instructional materials, record book maintained by the students, invitation of professional experts, allocation of time, teaching methods, co-ordination, provision of supervision, allocation of finance, list of articles/products prepared/produced by the students, procedure of disposal of finished products, provision of incentives / remuneration, involvement of local community/parents, utility of the SUPW activities for students, procedure of evaluation of students' performance and relevance of the SUPW activities introduced
3. To study the problems faced by the teachers and heads of the institutions in the implementation of Socially Useful Productive Work Programme at the secondary stage in Himachal Pradesh.
4. To study the problems faced by the students in carrying out Socially Useful Productive Work activities at the secondary stage in Himachal Pradesh
5. To suggest measures for the effective implementation of Socially Useful Productive Work Programme at the secondary stage in Himachal Pradesh.

Methodology

In the execution of the present study, historical as well as descriptive methods of research were employed Keeping in view the objectives of the present study, various strategies were applied which included· document analysis, survey, observations, programme analysis and personal contacts with teachers, heads of the institutions, students, parents, Technical Officer of the Directorate of Education (Himachal Pradesh), Principal of SCERT, Solan (Himachal Pradesh) and experts of the Department of Vocationalization of

Education of NCERT

Sample

The sample of the present study comprised 60 craft and other teachers providing instruction in SUPW activities, 33 heads of the institutions and 330 tenth grade students selected from five districts of Himachal Pradesh. The sample also consisted of 110 parents, Technical Officer of the Directorate of Education (Himachal Pradesh), Principal of SCERT (Himachal Pradesh) and three experts of the Department of Vocationalization of Education of NCERT Teachers, heads of the institutions, parents, Technical Officer, SCERT Principal and experts were selected through the method of purposive sampling. Students were selected through random sampling technique

Tools Used

To collect information regarding SUPW programme at the secondary stage, the following tools were developed and used by the investigator:

(i) Questionnaire for teachers
(ii) Questionnaire for heads of the institutions
(iii) Interview schedule for students
(iv) Interview schedule for parents
(v) Interview schedule for Technical Officer of Directorate of Education (Himachal Pradesh)
(vi) Interview schedule for Principal of SCERT (Himachal Pradesh)
(vii) Interview schedule for experts of the Department of Vocationalization of Education, NCERT
(viii) Observation schedule at the institutional level

Statistical Techniques Used

The obtained informations were analysed in terms of frequencies and percentages. In a few cases rank order analysis was used Besides quantitative analysis, qualitative analysis was also adopted

Delimitation of the Study

The study was evaluated as per the recommendations of the Review Committee/Ishwarbhai Patel Committee (1977) on SUPW in its report entitled 'The Curriculum for the Ten-Year School.'

General Conclusions

(i) *Development of the Concept of Socially Useful Productive Work*

— In Western countries, the value of educational handicrafts was recognised by philosophers and educators very early

— In ancient Indian times, when the pupils were living in the hermitages with their teachers, they were performing every kind of manual work for living and learning During the Muslim period, many Mohammedan rulers were great patrons of the craftsmen. Wood's Education Despatch of 1854 contemplated the introduction of pre-vocational education at the secondary stage Wood and Abbott (1937) also stressed the need of manual work in education for the sake of harmonious development of personality

— In view of the unique importance of work education for the all-round development of the child and well-being of the country, great importance has been given to it in almost all important schemes, reports and documents on education which have come out in the past few years in India particularly Gandhiji's scheme of Basic Education (1937), Education Commission Report (1966), and National Policy on Education (1986), and NCERT's Ten-Year School Curriculum (1975)

— Ishwarbhai Patel Committee popularly known as Review Committee which was appointed in 1977 to examine the curriculum for the Ten-Year School preferred the term SUPW to Work Experience and recommended that SUPW be an integral part of the curriculum at all stages of school education

— Work education has also been given importance in Adiseshiah Committee Report (1978), Challenge of Education — A Policy Perspective (1985), National Policy on Education (1986), National Policy on Education — Programme of Action (1986), Towards an Enlightened and Humane Society (1990) and Report of the CABE Committee on Policy (1992)

— The different nomenclatures in which SUPW has been implemented in different times in different States and Union Territories in India are 'Work Education,' 'Work Experience.' 'Art and Craft,' 'Earn While You Learn,' 'Pre-vocational Education' and 'Life Oriented Education'.

(ii) *Status of SUPW Programme*

— SUPW is a compulsory subject of study at the secondary stage in Himachal Pradesh

— A number of criteria including physical facilities available in the

institution, the developmental level of the students, interests of the students and feasibility to carry out the activities to a successful completion were followed in most of the high/senior secondary schools of Himachal Pradesh while selecting the SUPW activities.

- As many as 36 different SUPW activities had been introduced at the secondary stage in the academic sessions 1988 to 1990
- Community service was not taken seriously under SUPW in most of the high/senior secondary schools of the state.
- Most of the high/senior secondary schools of the state did not seem to have adequate infrastructure for various SUPW activities
- The majority of the teachers imparting instruction in SUPW activities at the secondary stage were matriculates and without any technical and professional qualifications and specialization in SUPW activities
- There was hardly any provision of refresher courses and in-service training for teachers imparting instruction in SUPW activities.
- Instructional materials were neither published nor available for teachers on SUPW in the State
- Students did not maintain record book of SUPW at the secondary stage
- Professional experts were not invited to the high/senior secondary schools of the state for SUPW activities
- Usually two periods of 35 minutes duration had been allotted to SUPW in Class IX and X but in few schools no periods had been allotted In some schools, though periods had been allotted to SUPW, these were used for teaching of other subjects
- The teachers followed as many as five methods in imparting instruction in SUPW activities Demonstration and Work Practice were the popular methods used by the teachers.
- At the state level, Director of School Education coordinates the SUPW Programme and District Education Officer with some assistance coordinates such programmes at the district level Moreover, craft teachers/ general subject teachers/senior teachers in consultation with the head of the institution coordinate such programmes at the school level.
- Supervision of SUPW activities was done by craft teachers, general subject teachers and heads of the institutions.
- No specific financial assistance was provided to the schools by the State government for SUPW programme.
- As many as 35 different articles/products were prepared/produced by the students under SUPW
- The products were either kept in the institution, used by the school community or used by students and teachers

— In a large majority of the high/senior secondary schools, there was no provision of incentives/remuneration for students participating in SUPW activities and teachers providing instruction in such activities.
— In a large majority of the schools, local community, parents were not involved in SUPW programme
— All the subjects agreed that participation of students in SUPW activities has utility for the students
— SUPW was a non-examination subject In most of the schools, SUPW was given less importance in comparison to other subjects.
— The majority of the subjects agreed that SUPW activities which were introduced in the schools were relevant to the needs of the local areas/ community.

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Interrelationship between Organizational Conflict in School Teacher's Stress and Burnout, in Relation to Teacher's Personality at Primary Level

K. N Mishra

Teacher's role in teaching is crucial and a teaching job is extremely demanding. Teachers work under different managements, where the working conditions are not alike Teacher's personal variables, working conditions and its effect on students' achievement have been significant areas of investigation so far. Even now researchers are very much concerned about investigating teacher's personality, job satisfaction, qualification, experience, etc and their effect on students' achievement. Most of the researchers have arrived at the conclusion that teacher's behaviour affects students' achievement However, the effects of the existing system on teacher's psychological state is a neglected area, where it is accepted that teachers are not working in stable working conditions of social demands and homogeneous classrooms, which are responsible for teachers' stress and burnout as well as students' academic declivity. These working conditions account for stress and burnout feelings in the life of teachers. Researches in the area of teacher stress, burnout, organizational conflicts, workload, coping behaviour in the context of the Indian educational system seem to be a neglected domain of investigation. There has yet been no study on teachers stress and burnout which evaluates the impact of different management types, teacher's personality and personal variables on it. Considering the yet unexplored area of teacher stress and burnout in the Indian

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context, two things seem quite prominent with regard to possible sources of stress, these are organizational conflict and the pattern of individual personality Therefore, the present study helps to understand the interrelationship between organizational conflict, stress, burnout and teacher's personality and analyse coping strategies adopted by teachers in a stressful situation The objectives of the study were as follows

— To assess and analyse the perceived organizational conflict, burnout and stress in schools by teachers
— To analyse personality and coping behaviour of teachers drawn from four different types of school management (Government, TRW Department, Private-aided and Public management)
— To analyse the personality of teachers in relation to each of the fifteen dimensions,
— to analyse relationship between organizational conflict variables With teachers' stress and burnout scores for each type of school management and to determine the predictive effectiveness in organizational conflict.

Design and Sample

The study used 2 (personality) × 4 (School management) factorial design The two types of personality were: internal-external and the four types of management included Government, TRW Department, Private-aided and Public managements Each sub-group generated by the two factors consisted of 25 primary school teachers

The sample of the study consisted of 200 primary school teachers of Bhubaneswar, the capital city of Orissa. In this city primary schools are managed by four different types of management. These are Government, TRW department, Private-aided and Public management Fifty teachers from each type of management were selected for the study. The mean age of the teachers ranged from 29-35 years for the four sub-groups Educationally each teacher was at least a high school with an E T diploma, but on an average the sample had graduate degree with B.Ed. degree The publicmanaged school teachers possessed higher educational qualifications The mean years of teaching experience were 2-15 years

Tools

In order to assess the different variables included in the study the following test materials were used

— Rahim Organizational Conflict Inventory (Rahim, 1983)

—Teacher Stress Inventor (Developed by the researcher)
—Maslach Burnout Inventory (Maslach, Jackson, and Schwab, 1986)
—I E Locus of Control Scale (Rotter, 1966)
—Open-end question possessing coping behaviour (Prepared by the researcher)
—Personal data sheet (Prepared by the researcher)

Procedure of Data Collection

Data collection was done individually in two phases A pilot study was conducted on 40 teachers to check the comprehensibility and suitability of organizational conflict inventory, teacher's stress inventory, burnout and locus of control scale. As a result of the pilot study, the wording of a few items of burnout inventory and organizational conflict inventory were changed and clarified After necessary modification the data was collected for the second phase by the researcher himself The questionnaires were administered to teachers in their schools. The collection of data from each type of management took four months. The responses were scored according to the scoring key of the respective questionnaire Results were analysed using means, S.D., F-ratios, Correlation, Regression analysis, Analysis of variance for regression effects and coefficient of concordance and x^2 for different variables.

Results

The findings obtained on organizational conflict, stress, burnout and coping behaviour could be summarised as follows.

Teacher's Personality

There are certain generalizations for teachers with external locus of control. Integrating organizational conflict with senior teachers are significantly related to stress feeling. Education, teaching experience, dominating organziational conflict with headmaster, senior and junior teachers, avoiding organizational conflict with headmaster and junior teachers are correlates of emotional exhaustion The regression effect was significant at .05 level for emotional exhaustion It appears that the personal and organizational conflict variables contribute much more to emotional exhaustion The predictability was low but regression was significant at 05 level Dominating organizational conflict with junior teachers is a single negative correlate of personal accomplishment scores. The relationship of dominating and avoiding organizational conflict with headmaster and junior teachers with depersonalization were

positively significant The teachers having external personality and working under TRW department managed schools experienced more avoiding organizational conflict with headmaster than the teachers with internal locus of control. Teachers with external locus of control had poor personal accomplishment in comparison to teachers having internal locus of control irrespective of schools management

In case of teachers with internal locus of control, none of the organizational variables was significantly related to stress However, education and obliging organizational conflict predicted 8 per cent of total variation Dominating and avoiding organizational conflict with junior teachers were positive correlates of emotional exhaustion scores. Personal accomplishment was significantly correlated with avoiding organizational conflict with junior teachers However, the prediction was low but the regression which was significant at .01 level for depersonalization sex, dominating organizational conflict with headmaster and senior teachers and obliging organizational conflict with senior teachers were significant correlates. The first one was negatively related, which predicted nearly 32 per cent of total variation, the regression is significant at .01 level Teachers having internal locus of control and working under government, private and public managed schools had more obliging organizational conflict with headmaster, dominating organizational conflict with headmaster, senior and junior teachers, avoiding organizational conflict with junior teachers and depersonalization (burnout) in comparison to teachers with external locus of control The teachers having different personality characteristics did not differ in stress feeling

School Management

In case of external personality teachers working under private aided schools, organizational conflict variables such as dominating organizational conflict with headmaster and avoiding organizational conflict with senior and junior teachers were related to stress, sex, teaching experience, integrating organizational conflict with headmaster, obliging organizational conflict with headmaster, senior and junior teachers and compromising organizational conflict with headmaster, senior and junior teachers had a negative relationship with teachers stress. As regards emotional exhaustion scores (burnout), dominating organizational conflict with headmaster and senior teachers and avoiding organizational conflict with headmaster had positive relationship which in total contributed to 91 per cent of the variation The dominating and avoiding organizational conflict with headmaster were significantly related to depersonalization scores of burnout For internal personality teachers working under private management, obliging organizational conflict with headmaster

and avoiding organizational conflict with headmaster and senior teachers were significantly related to the feeling of stress Personality and obliging organizational conflict with headmaster were significantly contributing to emotional exhaustion. None of the factors except compromising organizational conflict with headmaster was significanlty related to personal accomplishment (burnout) scores.

Depersonalization was determined more by integrating organizational conflict with senior teachers, obliging organizational conflict with senior and junior teachers, avoiding organizational conflict with headmaster, senior and junior teachers and compromising organizational conflict with senior and junior teachers. Teaching experience, personality and obliging organizational conflict with headmaster were negatively related with depersonalization scores of burnout.

When all the teachers of private managed school were considered it was found that education and obliging organizational conflict with headmaster were significantly related to stress scores. Sex, teaching experience, integrating organizational conflict with headmaster, senior and junior teachers, avoiding organizational conflict with senior teachers and compromising organizational conflict with junior teachers were negatively related to it. As regards emotional exhaustion the personality and avoiding organizational conflict with headmaster contributed 46 per cent of the variations. Personality, dominating organizational conflict with headmaster and senior teachers was negatively related to personal accomplishment (burnout). Whereas, integrating, organizational conflict with headmaster and senior teachers and compromising organizational conflict with headmaster, senior and junior teachers were significantly related and contributed to 95 per cent of the total variations. Dominating and avoiding organizational conflict with headmaster and senior teachers and integrating organizational conflict with headmaster were very significantly related to depersonalization at .05 level. Teachers working under privately managed schools had greater amount of intergrating and avoiding organizational conflict with senior and junior teachers, compromising organizational conflict with senior teachers and emotional exhaustion (burnout) followed by government and public management

For external personality teachers working under government managed school, teacher's personality and avoiding organizational conflict with junior teachers contributed 85 per cent of the total variation for stress, obliging, dominating, and avoiding organizational conflict with headmaster, senior and junior teachers and compromising organizational conflict with headmaster and junior teachers were significant predictors of emotional exhaustion The regression was significant at 05 level. It appears that personal and organiza-

tional variables make a substantial contribution to emotional exhaustion. As regards personal accomplishment scores of burnout syndromes, compromising organizational conflict with headmaster and senior teachers and obliging organizational conflict with junior teachers per cent positive relationship in total which contributed to 49 per cent of the variations So far as depersonalization is concerned obliging organizational conflict with headmaster, senior and junior teachers, dominating organizational conflict with junior teachers and avoiding organizational conflict with headmaster were significantly related and contributed 54 per cent of the variations. There are certain generalizations for internal personality teachers working under government managed schools. None of the organizational conflict variables was significantly related with stress, whereas, avoiding organizational conflict with headmaster, integrating and compromising organizational conflict with junior teachers predicted 63 per cent of the variations for stress Teaching experience appeared to be the single significant correlate of emotional exhaustion which contributed 43 per cent of the variations. As regards personal accomplishment the integrating and obliging organizational conflict with junior teachers were significantly correlated. Avoiding organizational conflict with junior teachers appeared to be the single predictor of depersonalization.

In case of all the teachers working under government schools a few generalizations could be made Not a single correlation of coefficient between organizational conflict and stress was significant. However, dominating organizational conflict with headmaster and junior teachers, obliging organizational conflict with senior and junior teachers, avoiding organizational conflict with junior teachers and compromising organizational conflict with senior and junior teachers had over 7 per cent contribution to the total variations in stress scores The regression effect being insignificant except in the case of emotional exhaustion. It appeared that personal variables and organizational conflict variables do not make much contribution to stress, personal accomplishment and depersonalization. Personality, obliging and dominating organizational conflict with headmaster, senior and junior teachers and avoiding organizational conflict with headmaster and junior teachers have been found to be significant correlates of emotional exhaustion

For external personality teachers working in public schools, analysis of results revealed that compromising organizational conflict with senior teachers and avoiding organizational conflict with junior teachers had significant positive relationship with stress. Obliging organizational conflict with headmaster and dominating organizational conflict with senior and junior teachers was negatively related to feeling of stress which in total contributed to 100 per cent of the variations However, avoiding organizational conflict with head-

master and obliging organizational conflict with senior teachers had significant but negative relationship with emotional exhaustion which in total contributed to 56 per cent of the variations. Sex, obliging and avoiding organizational conflict with junior teachers had significant negative relationship with personal accomplishment except the sex variable. Not a single correlation coefficient between organizational conflict variables and depersonalization (burnout) variable was significant in case of internal personality teachers education, obliging organizational conflict with headmaster and senior teachers and compromising organizational conflict with headmaster were significantly and positively correlated with teachers stress feeling As regards emotional exhaustion, sex and avoiding organizational conflict with senior teachers had significant negative relationship which in total contributed 43 per cent of the variations Whereas, teaching experience and compromising organizational conflict with junior teachers were significantly related to personal accomplishment. So far as depersonalization is concerned, sex, education, teaching experience, dominating organizational conflict with headmaster, senior and junior teachers and avoiding organizational conflict with junior teachers were significantly correlated except sex and had significant negative effects It is indicated that personal and organizational conflict variable make a greater contribution to depersonalization

Certain specific patterns emerged for teachers working under public management. Obliging and compromising organizational conflict with headmaster and senior teachers were significantly related to stress. Obliging and avoiding organizational conflict with senior teachers were significantly related to burnout relating to emotional exhaustion. The regression effect was significant at .01 level for emotional exhaustion It appeared that personal and organizational conflict variables have much more contribution to emotional exhaustion. Personal accomplishment was determined more by sex, dominating organizational conflict with senior teachers and avoiding organizational conflict with junior teachers, the latter being negatively related Only dominating organizational conflict with junior teachers was significantly related to depersonalization Teachers under public management school had more avoiding organizational conflict with senior teachers followed by teachers working under private and government managed schools.

For external personality teachers working under TRW department school, not a single correlation coefficient between organizational conflict variables and stress, emotional exhaustion and depersonalization was significant. However, integrating and compromising organizational conflict with senior teachers, dominating organizational conflict with junior teachers, obliging organizational conflict with headmaster and dominating organizational conflict with

junior teachers and obliging and dominating organizational conflict with senior teachers and integrating organizational conflict with junior teachers had over 50 per cent, 51 per cent and 95 per cent contribution to the total variation in stress, emotional exhausttion and depersonalization, respectively. Integrating organizational conflict with headmaster appeared to be the single positive significant correlate of personal accomplishment. In case of internal personality teachers, none of the organizational conflict variables was significantly related to emotional exhaustion and personal accomplishment scores. Compromising organizational conflict with headmaster and obliging organizational conflict with senior teachers were found to be significant negative correlates of stress However, education, obliging organizational conflict with headmaster, integrating and avoiding organizational conflict with junior teachers contributed a high percentage to the variables. As regards depersonalization, compromising organizational conflict with junior teachers was a single significant negative correlate which in total contributed 37 per cent of variations.

When all the teachers of TRW department were considered a few generalizations could be made. compromising organizational conflict with headmaster and senior teachers and obliging organizational conflict with junior teachers were negative correlates of stress. As regards depersonalization, dominating organizational conflict with senior and junior teachers and compromising organizational conflict with junior teachers were found significant correlates, the latter being negatively related Not a single variable of organizational conflict was related to emotional exhaustion and personal accomplishment scores. However, dominating organizational conflict with junior teachers and integrating organizational conflict with headmaster contributed 13 and 17 per cent to emotional exhaustion, and personal accomplishment, respectively. The teachers of TRW department managed schools had the least amount of integrating and compromising organizational conflict with junior teachers, avoiding organizational conflict with headmaster.

The types of school management did not influence teacher's stress feeling. The level of experienced stress was more in all types of school management

Personality and School Management Interaction

Teachers having external locus of control, frequently involved in sharing whereby their headmaster gave up something to make a mutually acceptable decision in a conflicting situation, and experienced greater amount of stress and competence in one's work with people in comparison to teachers with internal locus of control under private, government, and TRW department managed school Teachers with external locus of control working under government and public managed school experienced greater amount of compromising organi-

zational conflict with headmaster and emotional exhaustion respectively in comparison to teachers having internal locus of control. Such types of feeling were experienced more in private management followed by public managed school teachers. The teachers under government and TRW department managed schools had the least amount of compromising organizational conflict with headmaster and emotional exhaustion Teachers with external locus of control experienced more lacking in personal accomplishment in comparison to teachers having internal locus of control under public management followed by TRW department and government managed school teachers Teachers having internal locus of control working under TRW department managed schools and teachers with external locus of control working under private, government, and public managed schools had more conflict with senior teachers in exchange of information and examination of differences They experienced more conflict under private managed schools followed by government and public managed school teachers Teachers working under TRW department managed schools had least integrating organizational conflict with junior teachers

Coping Behaviour

Results revealed significant differences in coping behaviour related to personality types and management variation The findings have been interpreted in relation to teachers stress management research and recent development in the coping process. It is hoped that further research will emanate in our society to present comprehensive organizational and individual genesis of the coping process among teachers Attempts have been made to integrate the conflict, reactions to stress, and derive the coping behaviour in a stressfull situation.

The present study highlights two of the several aspects that contribute to the development of effective learning and morale in the school management These are· the type of school and the teachers It gives specific directions regarding the rigidity and concealed fear that is prevalent in the private and public management school system. One of the significant practical implications is that if private schools take care of the humanitarian aspect then much of the conflict appearing in the mind of the teachers will be reduced If the headmaster maintains more rational and human relationship then much of the organizational conflicts which contribute to stress can be reduced. If teachers maintain internal personality, develop more self-attribution, many of the feelings of stress, burnout will be reduced rather than maintaining a more fatalistic and externally oriented attitude. The kind of coping behaviour that appears to have been used by teachers having internal locus of control needs to be adopted by

teachers since these coping behaviours such as conscious about duty, try to adjust with the situation, and patience in problematic situations are more relevant in dealing with stress situations. In short, the findings of the study suggest that it is the type of management that contributes to the organizational climate which are less stress-producing among teachers and teachers who are more realistic and self-attributing adjust better in stress situation.

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Teacher Morale and Student Morale at Secondary Level in Dindigul Anna District of Tamil Nadu

T Savadamuthu

In this computer era, technological and scientific development is so rapid and vast that in every field rapid changes are being brought about There is an exigent need to identify, nurture and develop the potential of the students who have to shoulder the development of our nation. The students have to be prepared for the responsibilities, privileges and obligations of future life. The attainment of objectives is dependent upon the educational environment of the educational institutions. The functional aspect of the educational environment is determined by the morale of the teachers and students Hence an attempt was made by the investigator to conduct a study on teacher morale, student morale and the relationship between the morale of teachers and that of their students.

Conceptual Framework

Morale is the term usually applied to armed forces during wartime and to sports and athletic teams The analysis of relevant literature revealed that morale has been variously regarded as identification with organisational goals (Houser, 1938), a collection of job related attitudes (Burns, 1951-52), the feeling or cohesiveness of a group (Viteles, 1953), embracing the individual's work attitudes and job satisfaction (Blum, 1956), a predisposition to exert extra effort (Gubam, 1958), a feeling of general well-being and psychological comfort (Mathis, 1959), good personal adjustment (Getzets *et al* , 1968), ego

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involvement in one's job (Herzberg, 1968, Porter and Lawler, 1968) a feeling of togetherness (Blackmanship, 1990). courage, faith, personal integration (Good, 1990) Guion (1958) defined morale as, "the extent to which the individual perceives that satisfaction as stemming from his total job situation". Hence, in this study, teacher morale and student morale are conceptualised in terms of individual characteristics, behavioural characteristics, group spirit, attitude towards teaching and learning and community involvement.

Objectives

The main objectives of the study were·

1 To find out the level of morale of teachers
2. To find out the level of morale of students
3 To find out the relationship of teacher morale with sex, location experience, type of schools, qualification, and subject specialisation of teachers
4. To find out the relationship of student morale with sex, location and type of schools
5 To find out the relationship between teacher morale and student morale.

Hypotheses

The following hypotheses were formulated ·

1 There is significant difference between the morale of men teachers and that of women teachers.
2. There is significant difference between the morale of rural school teachers and that of urban school teachers.
3. There is significant difference between the morale of government school teachers and that of private school teachers.
4 There is significant difference among the morale of subject teachers (Specialists)
5 There is significant difference between the morale of boys and that of girls.
6. There is significant difference between the morale of rural school students and that of urban school students
7. There is significant difference between the morale of government school students and that of private school students
8. There is significant difference between the morale of students belonging to high teacher morale (HTM) schools and that of those belonging

to low teacher morale (LTM) schools.

9 There is significant relationship among the different dimensions of teacher morale.

10 There is significant relationship between the length of the teaching experience of the teachers and their morale

11 There is significant association between the qualification of the teachers and their morale.

12. There is significant association between the subject specialisation of the teachers and their morale

13 There is significant relationship among the different dimensions of student morale

14. There is significant relationship between the morale of teachers and that of their students.

Research Strategy

Normative survey was the design used for the present study since this method helps to collect data from a relatively large number of cases at a particular time.

Development of the Tools

The investigator developed a tool to measure teacher morale as "Teacher Morale Scale (TMS)" and another tool to measure student morale as "Student Morale Scale (SMS)" after reviewing the literature and tools available on morale. The content validity of the tools by expert opinion, item validity by item analysis and the reliability of the tools by spilt-half method were established

Population and Sample

The population of the present study was defined as the teachers working at the secondary level and the students studying at the secondary level in one hundred and two high and higher secondary schools in Dindigul Anna District of Tamil Nadu. Forty schools were selected from one hundred and two schools by using stratified random sampling procedure. A section in ninth standard was randomly selected from each sample school and five different subject teachers who were teaching the selected section of the sample school constituted the sample of teachers and the total number of teachers in the sample was 200 Thirty students from each sample section were randomly selected and it constituted the sample of 1,200 students.

Data Collection

After getting permission from the heads of schools, the tools were administered to the sample of teachers and students and the data were collected

Scheme of Analysis

The investigator used the descriptive, differential and relational analyses for analysing the data.

Findings

1. The level of morale of teachers is high.
2. The morale of women teachers is higher than that of men teachers.
3. The morale of rural school teachers is higher than that of urban school teachers
4. The morale of government and private school teachers was the same
5. The morale of subject teachers (Specialists) is same.
6. The level of morale of students is high.
7. The morale of girls is higher than that of boys
8. The morale of rural and urban school students is same.
9. The morale of private school students is higher than that of government schools students
10. The morale of students belonging to HTM schools is higher than that of those belonging to LTM schools
11. There is no significant relationship among the different dimensions of teacher morale.
12. There is no significant relationship between the length of the teaching experience of the teachers and their morale
13. There is no significant association between the qualification of the teachers and their morale
14. There is no significant association between the subject specialisation of the teachers and their morale.
15. There is significant relationship among the different dimensions of student morale.
16. There is significant relationship between the morale of teachers and that of their students.

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The Development of Character in Children with Reference to Certain Cognitive and Affective Variables

JAYASHREE PANDHARPURKAR

WHENEVER psychologists and educationists talk about the objectives of education, it does not take much effort and thought to declare that all round development of personality including the development of character is the most cherished goal of education Considering the prevailing education system, there are few institutions which consider transmission of certain values and development of character as the objective of education, which could be meaningfully pursued There is a tremendous emphasis on scholastic attainment, because it is the scholastic attainment which finally determines one's economic status and position in society. Since the openings are limited, education serves more as a means of elimination from competition rather than enhancing certain positive characteristics of children. The race for greater scholastic attainment and the pursuit of power and self may naturally intensify sense of competition among children, which finally are likely to deaden the positive humanistic concerns

In order to revive such values we may have to think various ways and means through which we could inculcate the desirable values in our children, who are the future citizens of our country.

OBJECTIVES

The objectives of the present study were :

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1 To understand which characteristics parents want to inculcate in their children.
2 To examine how character traits like Honesty, Cooperation, Generosity, Helpfulness and Perseverance grow in the early years of a child's life, and how they are interrelated with other abilities of the child such as intelligence, creativity, fear and frustration.
3 To understand what role the school and the home play in the development of character of a child

Sample

The study was conducted on 96 childrens in the age-group of 4 to 8 years, who were selected randomly from four different schools of Nagpur city, which run under four different managements

Tools

Following tools were used to measure independent and dependent variables :

(A) Independent Variables

1 *Hindi Mulanche Buddhimapan* by V V Kamat (1940) was used to measure intelligence of children
2. After considering various activities, two tasks were selected to measure creativity of children They were
   (i) Drawing
   (ii) Painting
3. For the measurement of Fear in Children, 'Fear Checklist' by Usha Rani Sidana was used.
4. Udai Pareek's 'Rosenzweig Picture-Frustration Study — Children's Form' was used to measure frustration in children.
5 The socio-economic status of a subject was determined after collecting information through the administration of a questionnaire, considering income, education and occupation as the main constituents

(B) Measurement of Character

1 *Parent-Preference-Schedule*
In order to examine how much emphasis parents give to the traits considered in the present study, a Parent-Preference-Schedule was prepared With the help of experts a 'Forced-Choice-Format' was

constructed in which one statement constituted the desired trait while another some antithetic trait Both the statements were equally desirable and challenging. Parents were asked to set one of the statements The face and content validity of the tool was established

2. *Preparation of Observation-cum-Performance Test*
   Observation was considered as the major tool for the measurement of character After reviewing the literature and consulting experts, six tests/situations were created for each trait under which children were observed Once they were observed in the natural environment of the school. The reliability of observations was established through correlation method and the face and content validity was also established
3. *Preparation of Interview Schedule*
   To understand a child's behaviour at home and in school, an interview schedule (Format) was prepared for teachers, parents and siblings Experts opinions were taken into consideration while preparing the schedule
4. *Preparation of Case Studies*
   Thorough case studies were prepared in which observations of children, interviews with parents and teachers, children's results of creativity, fear and frustrations, etc. were included
5. *Procedure of Observations and Interview*
   Children were observed eight times in a year's span once in a month. The investigator along with a co-rater observed children in testing situations which were specifically created for observations A 5-point scale from highly positive to highly negative was prepared for ratings.

The parents of children at their respective homes and teachers at schools were interviewed. The structured format was duly filled in and the proceedings of the informal interviews were noted down

Analysis of Data

The statistical procedures used in this study for analysing data were:

1. Mean scores of Parent-Preference-Schedule
2. "T-test" was used to find out the consistency of character traits and significant differences among sex and SES.
3. Intercorrelations among various character traits as well as of various other abilities and character traits.
4. Factor Analysis.

FINDINGS

1. The parents were positively interested in the development of positive character traits but it was found that they showed greater concern for the scholastic attainment of their wards in comparison to the characteristics like honesty, cooperation, generosity and helpfulness.
2. The children are inconsistent in their behaviour so far as honesty is concerned. The situations which were more tempting could not be resisted by children and thus they were easily lured to indulge in a behaviour which is contrary to honesty.
3 One of the most striking and to a considerable extent anticipated conclusion is that with the advancement of age the children tend to be less honest. This finding is consistent with Rousseau's "Social Contract" principle The proverbial angle in the child seems to be corrupted by the social interaction which the child goes through with the advancement of age. The other characteristics seem to have been ingrained and strengthened among children with the advancement of age. The reason being the survival value of such characteristics.
4. There are no sex differences operative in the development of character traits.
5. The socio-economic-status of children was found to be the most significant factor associated with the development of various character traits. Children having higher SES background were found more honest, cooperative etc. even though overall scores of these traits were found to be low. Probably the psychology of scarcity affects the development of character adversely
6. The Cognitive variables : Intelligence and creativity were found positively related with the development of character traits
7 The relationship between affective characteristics fear, frustration and character was not found significant
8. The intercorrelations between all possible pairs of characteristics were found positive and significant which suggest that there is something unitary within the makeup of a man which operates to bring about the development of various character traits
9 Subjecting the correlation matrix to factor analysis, it was found that there were two independent factors underlying the characteristics investigated in the study. They are "Super-ego-strength" and "Pragmatic awareness of Social responsibility".

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Cost Effectiveness of Training Modalities in Population Education

S. B. YADAV

THE population pressure in developing countries is the major roadblock in improving the quality of life of its people. In a number of developing countries the fruits of development are not only neutralised but also become invisible due to the higher rate of population growth In our own country, this fact can be conspicuously felt The positive effects of development cannot be experienced unless the population is controlled through systematic planning and education. In the absence of these efforts, the threat to the environment also looms large

Conscious of the negative effects of a higher rate of population growth, India planned a number of initiatives. One of these initiatives refers to education. The young generation studying in school on population related issues. It serves the purpose of developing an informed generation and at the same time avail of the trade off in the form of transmission of knowledge about these issues from children to their parents The effectiveness of the population education programme depends, to a large extent, on the effectiveness of teachers. As teachers' behaviour is an important variable in the teaching-learning process, learning in children depends, to a great extent, on teaching competencies of teachers which is largely dependent on the training. Teacher training is considered as one of the vital components particularly in an area which is value-laden. The training of teachers at the secondery level becomes more important as teachers have to teach students who are at the adolescent

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stage It is during these years that population related attitudes, habits and thinking are formed In order to educate them about various population issues and enable them to take rational decisions on various aspects of life the secondary school teachers play a very important role The effectiveness of the teachers, in turn, depends upon the effectiveness of the training they receive. The training programmes have to be cost effective so that millions of teachers can be trained within the limited resources and a reasonable time span.

The Problem

The specific problem can be stated as "A Study of Cost Effectiveness of Training Modalities in Population Education"

The present study purports to investigate the cost effectiveness of three training modalities, namely, Face-to-Face Interaction Mode, Self Learning Individual Mode and Self Learning Paired Mode.

Objectives

The study purported to achieve the following objectives.

(i) To study the training gains in terms of awareness of population related issues in teachers trained through the three modalities.

(ii) To study the training gains in terms of attitude change towards themes and messages of population education among teachers trained through the three modalities

(iii) To study the cost of training teachers in population education using the three modalities

(iv) To study cost effectiveness of the three training modalities used for teacher training.

Hypotheses

The following hypotheses were formulated for the study :

H1: There is no significant difference in the mean gain scores of groups of teachers with regard to awareness of population related issues under the three modalities

H2: There is no significant difference in mean gain attitude scores of teachers on population related ideas and themes under the three training modalities.

H3: There is no difference in the per unit cost of teachers trained through the three modalities

H4: There is no difference in the cost effectiveness of teachers trained through the three modalities with regard to awareness of population related issues.

H5. There is no difference in cost effectiveness of the three modalities with regard to attitude change in teachers

H6: There is no difference in the cost effectiveness of the three training modalities both in respect to awareness and attitude

H7. The gain in awareness of teachers is related to the sex of the teachers.

H8: The gain in awareness of teachers is related to the age of teachers

H9 The gain in awareness of teachers is related to the academic qualifications of the teachers.

H10·. The gain in awareness is related to the professional qualification of the teachers.

H11· The gain in awareness is related to the teaching experience of the teachers.

H12 The gain in attitude change is related to the sex of the teachers

H13· The gain in attitude change is related to the age of teachers

H14 The gain in attitude change is related to the academic qualification of the teachers

H15. The gain in attitude change is related to the professional qualification of the teachers

H16· The gain in attitude change is related to the teaching experience of the teachers.

Delimitation

Due to the constraint of resources, the study was delimited in several ways It was limited to schools in one district of a state Being an experimental study, the tests had to be personally administered So, the subjects were to be kept within a reasonable geographical range. It could have been teachers across educational stages, but it was confined only to secondary school teachers.

Procedure

Design and Methodology

The study employed pre-test and post-test design It involved study of effect of independent variables (training modalities) on dependent variables, namely, awareness and attitude of teachers Though complete control over all the intervening variables was not possible, efforts were made to control some while some other factors were controlled in the design itself.

Sample

Ninety-six secondary school teachers from rural schools in Gurgaon

district were selected through stratified random sampling technique. For the two modalities one teacher from one school, whereas for the third modality two teachers from one school were selected.

Tools

In order to collect the data the following tools were used :

(i) Population Education Awareness Test
(ii) Population Education Attitude Scale
(iii) Training Cost Assessment Sheet

Data Collection

For data collection first of all rapport with the District Education Officer, principals and teachers was established. List of schools and teachers were procured Modalitywise allocation of teacher's list was prepared. Population education awareness test and attitude scale were administered before training. Then teachers were given treatment under the three modalities. After the training post-test was administered Data on cost was collected through training cost assessment sheet, by studying cash books and account books and through personal discussion with the project staff of SCERT

In order to test the hypothesis relating to the effectiveness of the three training modalities analysis of variance, F-test, -t-test and Chi-square test were used

Findings

The significant findings emerging from the study are given below

(A) Teachers Training Effectiveness

1 Teachers awareness on pupulation issues improved after training under all the three modalities
2. Face-to-Face training modality is more effective than Self Learning Individual Mode and Self Learning Paired Mode. The teachers trained through the Face-to-Face training modality scored higher (32.13 mean score) than Self Learning Individual Mode (27.83 mean score) and Self Learning Paired Mode (31.37 mean score)
3. There is a significant difference in the awareness level of teachers trained through the three modalities.
4 Teachers trained under Face-to-Face and Self Learning Paired Mode show improvement in the attitude towards population related ideas and themes.

Attitude scores of teachers trained under Self Learning Individual Mode show negative change in the attitude as the mean scores declined from 127 07 to 124 49.

5 There is no significant difference in the change of attitude of teachers trained under the three modalities.

(B) Teachers Variables and Training Effectiveness

1 When viewed sexwise, no significant difference was seen among the male and female teachers trained under the three modalities

2 Age of the teachers is related to population awareness under Self Learning Individual Mode The teachers of higher age performed better on population related issues, whereas under Face-to-Face and Self Learning Paired Mode age was not found related to population awareness.

3 Under Self Learning Paired Mode and Self Learning Individual Mode, academic qualifications had no significant influence on the awareness level of teachers However, in Face-to-Face Interaction strategy, teachers of higher academic qualification showed more awareness on population issues

4 Professional qualification of teachers grouped under the three modalities was not related to post-training awareness level of teachers regarding population issues.

5 Teaching experience of the three groups of teachers was not related to the post training awareness level of teachers regarding population issues

6. There was no significant difference in the attitude of male and female teachers towards population related themes and messages under the three modalities

7 Age is not a significant factor affecting the attitude of teachers towards population related themes and messages under the three modalities.

8 Academic qualification did not influence attitude of teachers towards population related ideas and messages under Self Learning Individual Mode and Self Learning Paired Mode. However, academic qualification. under Face-to-Face Interaction influenced the attitude of teachers.

9 Academic qualification has been found related to both awareness and attitude level in the post-training stage under Face-to-Face Interaction Mode. Higher academic qualification helped the teachers in positively changing the awareness and attitude towards population related themes and messages

10 Teachers having a B Ed degree and teachers having an M Ed degree in the three groups did not differ significantly in relation to the attitude towards population related themes and messages

11 Teaching experience of different groups of teachers trained under the three modalities was not related to attitude towards population related themes and messages

(C) Cost Effectiveness of Training

1 Face-to-Face Interaction Mode had the highest mean gain scores both for awareness and attitude whereas Self Learning Paired Mode had the second largest mean gain score for awareness and attitude towards population related issues and ideas.

2. Self Learning Paired Mode is the least costly modality and Face-to-Face Interaction Mode is the most costly modality.

3. Self Learning Paired Mode is the most cost effective.

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Book Review

New Dimensions in Education : Concepts and Research

Y P Aggarwal (Ed.)
Department of Education
Kurukshetra University, 1993, pp 330

Education is a subsystem of society and hence draws its force, content and process mechanism on a multi-dimensional, inter-disciplinary canvas That is why its process manifests dynamism and pervasiveness crossing over the boundaries of social sciences and to a large extent societal contemporary issues During the last thirty years (after Kothari Commission 1964-66) educational concerns and research thereon have got articulated New dimensions, issues and concepts have been added. But somehow, educational research has come under fire for being in a hasty and vague frame, poor analysis, data management problem, interpretation and above all an illusionary perception of the researchers that lessons from their enquiry could be quoted as statements to reinforce and revalidate general principles and theories in education. In our country educational research does not seem to have acquired a high profile in terms of quality, relevance, appeal, impact and creditability.

Forty papers dealing with a wide range of subjects and themes on education presented at a university seminar at Kurukshetra have been brought into a publication in the present review These papers are classified into broad areas like :

(i) Non-formal, Distance and Adult Education
(ii) Educational Management, Organisational Behaviour and Educational Finance

(iii) Teacher Education
(iv) Education of Scheduled Castes and Scheduled Tribes
(v) Science Education
(vi) Creativity Education
(vii) Yoga Education
(viii) Special Education
(iv) Miscellaneous category

The classification and subject treatment of these papers indicates that educationists are tending towards 'applied fields of education' instead of traditional compartmentalisation viz. Philosophy of Education, Sociology of Education, Psychology of Education, Educational Measurement and Evaluation Is it a right trend?-Perhaps this trend is an 'offshoot' of reflective ideas of the celebrated title *Learning To Be* (Unesco) The advances made in Communication Technology has added fervour and zeal to these ventures In the present publication, new dimensions relate to· Research in Staff Development in Higher Education; Futurising Education, Consumer Education, Environmental Education, Yoga Education The format of each paper examines concept, basic approach, researches and identification of research gaps on the probed field of enquiry Papers under Distance Education, Non-formal Adult Education, Educational Management and Futurology of Education, Education of Scheduled Castes and Schedules Tribes address the problem of Access to Education and Educational Opportunity, the open door policy in India has broadened the secondary and tertiary sector But the papers have failed to articulate or resolve the elusive triangle "Equity, Efficiency and Quality" in education It is here the researchers have to break 'new ground' so as to seek 'equilibrium' for a level-playing ground on Equity, Efficiency and Quality Syndrome.

A paper on 'Some Organisational Aspects of Education Research at University Level', laments the soft options adopted by the scholar and supervisor in university level research Only a strong and hard blow can change the system — a prescription suggested by the author of the paper While toeing the line of Toffler (1974) "All education springs from images of future and all education creates images of the future' author of the 'Future Studies and Educational Management· Methodology Perspectives', examines the various methodologies viz. Delphi Method, Brainstorming, Cross Impact Analysis Scenario Writing and Future Wheel Exercise. It would have been better if some perspective on the futuristic scenario of Indian Education could have been given. While reviewing studies as in educational finance the author refers to a deficiency and suggest research efforts in areas of. growth of public expenditure on education budgetary allocations, resources for education, non monetary inputs, costs of education, educational cost indices; relationship between

investment in education and economic growth, cost-benefit analysis, socio-economic studies, utilisation of educational infrastructures and systems of assistance from the government. Some of the papers are textbook type 'which may be useful for general readers who would like to add a stock and references in their knowledge'.

Two papers on Scheduled Castes and Scheduled Tribes review research studies in this category but do not provide suggested studies so necessary for the purpose of policy formulation in future While reviewing the studies on creativity and its implication in education, the author recommends brainstorming, role-playing, problem-solving and synectics for enhancing 'creativity in school children'.

It is difficult to review all forty papers here, however, the publication could serve as a useful reference both for young scholars and general readers who are interested in a subject like Education which is an 'index' of development of any learning society

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NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

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